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# Walking and Talking for the Elevation of Mood and Satisfaction Levels

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# Walden University

College of Social and Behavioral Sciences

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Lori Jean Love Kellner-Schoelles

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Dr. Patti Barrows, Committee Member, Psychology Faculty
Dr. James Carroll, University Reviewer, Psychology Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2018

Abstract

Walking and Talking for the Elevation of

Mood and Satisfaction Levels

by

Lori Jean Love Kellner-Schoelles

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Clinical Psychology

Walden University

September 2019

## Abstract

This study is important because of the high prevalence of mental and physical disorders experienced by American adults. These bring undue strain to those suffering them and to the health care system because research indicates that many of these disorders may be mitigated via supportive conversation, or through the practice of physical exercise. The purpose of this quantitative treatment-control study was to examine the relationship between the practice of walking/talking and resulting mood and satisfaction levels. Self-determination theory and biopsychosocial perspectives were used to provide a framework for the study. The research questions asked whether there was a mood response difference, or a difference in the level of satisfaction, between walking/talking and sitting/talking. Research questions also asked whether correlations existed between mood and satisfaction levels and levels of psychological needs being met during exercise. Participants volunteered from rural New York communities, and they were assigned equal intervals of the 2 different activities for a total of 10 weeks. Data were collected via three scales; scores were compared via use of independent-samples *t*-test, simple linear regression, Pearson correlation, and analysis of variance to investigate the relationships between the independent and dependent variables. Outcomes showed no significant mood response differences or satisfaction differences between the two different activities. No significant correlations were found between mood scores or session rating scores and levels of psychological needs met in exercise. Knowledge gained through this study may support individuals and practitioners incorporating lifestyle change approaches, and findings may inform further research design development on the topic.

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# Chapter 1: Introduction to the Study

## Background of the Problem

The high prevalence of mental and physical disorders experienced by American adults is cause for much concern among health professionals and is also the cause of extreme costs for citizens. Many of these disorders may be avoided or mitigated via psychotherapy or similarly supportive conversation, or through the practice of physical exercise. The combination of both may provide an enriched experience that could potentially deliver improved results. I will explain these in greater detail in following paragraphs.

Psychiatric disorders are one of the leading causes of disability for all populations in the United States, causing inordinate suffering (Peng, 2009; U.S. Department of Health and Human Services [USDHHS], 2001). Major depressive disorder (MDD) is one of the most prevalent psychiatric disorders; more than 30 million adults, or almost 20% of the American population, are predicted to experience a significant episode of depression in their lifetime (Mata et al., 2012). The financial burden on the general public is significant, as health insurance costs and taxes increase with the prevalence of physical and mental illness (USDHHS, 2001).

Research shows that therapeutic interventions, such as supportive conversation, and the experience of discussing one's thoughts and feelings with an active listener, can result in improved emotional wellness and decreased symptoms of mental disorders. For example, Bäck-Pettersson, Sandersson, and Hermansson (2014) explained the benefits of supportive conversation, which is frequently used as standard treatment in psychiatric care to strengthen patients' abilities, resources, and general wellness. It was found to be

most beneficial when the focus is on problem-solving and alleviating difficulties of daily demands of life (Bäck-Pettersson et al., 2014).

Regular physical exercise can also result in psychological benefits, including improvements in depression, anxiety, and self-concept (Bock et al., 2014; Gallegos-Carrillo et al., 2013; Hays & Sime, 2014; Mata et al., 2012). Von Glahn (2012) further explained the beneficial effects of supportive conversation; the facilitative condition for a cathartic release is that sufficient support and acceptance is provided; and a nondirective, unforced manner of discussion is supportive of the healing process.

Gallegos-Carrillo et al. (2013) reported that many intervention studies, specifically clinical trials investigating the use of physical activity as a treatment for mood disorders, have concluded that exercise is an effective aspect of treatment for depression. According to the World Health Organization (WHO, 2010) and the Centers for Disease Control (CDC, 2007), a sedentary lifestyle is problematic to the general public health. The high prevalence of various diseases, the annual costs for medical procedures related to obesity, and the effects of problems caused by a sedentary lifestyle are concerning. Physical health benefits of exercise include the decreased likelihood of diseases such as obesity, diabetes, coronary heart disease, certain cancers, and metabolic syndrome, as well as improving bone and joint health (Bock et al., 2014; Wilson, Mack & Grattan, 2008). Epidemiological studies conducted during the past 50 years demonstrate that physical activity is associated with decreased morbidity and mortality in both men and women. I propose that an increased level of physical activity by the general public could help to improve the general collective health of the people.

The positive effects of therapeutic social interactions could be combined with the

benefits of physical activity. My intention was to address a gap in the literature; specifically, the affective advantages of the combination of supportive conversation and physical exercise were studied. Much is known about the benefits of exercise on mood enhancement (Bock et al., 2014; Burton, Pakenham, & Brown, 2010; Gallegos-Carrillo et al., 2013; Hays & Sime, 2014; Kassavou, Turner, Hamborg, & French, 2014; Mata et al., 2012; McGale, McArdle, & Gaffney, 2011; Oeland, Laessoe, Olesen, & Munk-Jørgensen, 2010; Roman, 2010; Scheewe et al., 2013; Ströhle, 2009), and much literature has focused on the benefits of supportive conversation and the therapeutic nature of the relational connection between people, in terms of symptom reduction and mood elevation (Bäck-Pettersson et al., 2014; Landoll, Schwartz-Mette, Rose, & Prinstein, 2011; Von Glahn, 2012). However, a dearth of research exists on simultaneous introduction of the two beneficial activities. I intended the current study to provide knowledge and insight that could inform a beneficial new program for the promotion of mental health and avoidance of mood disorders, as well as to the treatment of mood disorders.

## Problem Statement

No known prior research has introduced the specific combination of supportive conversation and physical activity, while measuring session outcomes, mood levels, and the satisfaction of psychological needs in exercise. Questions remain in terms of the outcomes of merging supportive conversation with physical exercise. Burton et al. (2010) conducted a study on the willingness of psychologists to promote physical activity as part of mental health treatment, finding that many practitioners are potentially interested in the practice. However, there has been little systematic research on the promotion of physical activity in the context of mental health treatment, as part of the management of

psychological symptoms (Burton et al., 2010). More research is needed to examine the promotion of physical activity by mental health workers, and its influence on clients (Burton et al., 2010). Wilson et al. (2008) wrote that scientists would be prudent to continue developing research programs to inform the interesting practical question involving human motivation to exercise. This knowledge, combined with the knowledge gained by examining the outcomes of the combination of supportive conversation and physical activity, could potentially lead to a better understanding of a concept that may help mitigate public health problems.

## Purpose of the Study

My purpose in this quantitative, treatment-control survey study was to examine the relationship between the practice of combining walking with talking and both levels of mood enhancement and levels of satisfaction. The independent variables were the talking and/or walking activities; the dependent variables were the participants' mood levels following the practice, the satisfaction outcomes, and the levels to which psychological needs were met by the exercise practice. My intent in this study was to explore the relationships between physical activity, relational talk, levels of mood, levels of satisfaction, and levels of psychological needs met during exercise.

## Research Questions and Hypotheses

**Research Question 1:** Is there a mood response difference between a half hour of walking and talking versus a half hour of sitting and talking?

***Null hypothesis* ($H_0$1):** The practice of walking and talking will not result in statistically significant differences in mood changes, as measured by the brief mood introspection scale, when compared with the results from sitting and talking.

***Alternate hypothesis* ($H_a1$):** The practice of walking and talking will result in statistically significant differences in mood changes as measured by the brief mood introspection scale, when compared with the results from sitting and talking.

**Research Question 2:** Is there a difference in the level of satisfaction between a half hour of walking and talking versus a half hour of sitting and talking?

***Null hypothesis* ($H_{02}$):** There is no statistically significant difference between the effects of the practice of sitting and talking and the practice of walking and talking, as measured by the session rating scale.

***Alternate hypothesis* ($H_{a2}$)**: There is a statistically significant difference between the effects of the practice of sitting and talking and the practice of walking and talking, as measured by the session rating scale.

**Research Question 3:** When participants enjoy aspects of a positive exercise experience, as shown by higher ratings on the basic psychological needs in exercise scale, is there a mood response difference?

***Null hypothesis* ($H_{03}$)**: There is no statistically significant correlation between the results of the basic psychological needs in exercise scale and the brief mood introspection scale.

***Alternate hypothesis* ($H_{a3}$):** There is a statistically significant correlation between the results of the basic psychological needs in exercise scale and the brief mood introspection scale.

**Research Question 4**: When participants enjoy aspects of a positive exercise experience, as shown by higher ratings on the basic psychological needs in exercise scale, is there a difference in the level of satisfaction with the experience?

***Null hypothesis* ($H_{04}$):** There is no statistically significant correlation between the results of the basic psychological needs in exercise scale and the session rating scale.

***Alternate hypothesis* ($H_{a4}$):** There is a statistically significant correlation between the results of the basic psychological needs in exercise scale and the session rating scale.

## Theoretical Framework

I used the self-determinism theory and the biopsychosocial approach to provide a framework for the study. In the following paragraphs, I will elucidate the foundations for these approaches and will explain the bases for the applications in this study.

### Self-Determination Theory

Self-determination theory purports that an individual's levels of autonomy, competence, and relatedness influence their motivation for behavior (Ryan & Deci, 2008; Sweet, Fortier, Strachan, & Blanchard, 2012). The research methodology provided opportunities for the participants to experience these aspects of life, and the chosen instruments measured levels of these concepts, providing a comparison between the participants in different groups. The basic psychological needs in exercise scale (Vlachopoulos & Michailidou, 2006) measures aspects of autonomy, relatedness, and competence. These include the participants' relationship with their exercise partners (relatedness), their perception of having choices regarding their exercise habits (autonomy), and their feelings of success with regard to working toward their exercise goals (competence). A more thorough explanation will follow in the next chapter.

### Biopsychosocial Theory

The biopsychosocial framework is endorsed by psychologists as a way of understanding the concept of the potential benefits of the combination of physical activity

and supportive conversation. The biopsychosocial approach to behavioral health care looks at human development and functioning in a holistic manner, considering all of the intertwined biological, psychological, and sociocultural influences that affect each person's life (Engel, 1977; Melchert, 2015). In this study, I investigated the physiological effects of physical activity, combined with the social aspect of the activity of walking together, and the psychological effects that result. The instruments that I chose measured biopsychosocial aspects related to the activity of walking and talking; the research attempted to determine whether correlations exist, between the extent to which these facets of life are fulfilled, and mood/satisfaction levels. A more thorough explanation will follow in the next chapter.

## Nature of the Study

I carried out the research in a quantitative manner, gathering measurable data for the purposes of accurately comparing effects of different activities. I analyzed both between-groups and within-groups data and compared them to explore results of the two different interventions within each group. The rationale for this design was to explore the effects of each practice on both groups and to evaluate the disparities between the two different activities within each group. The independent variables were the activities of walking while talking or sitting while talking. The dependent variables were the participants' mood, their levels of satisfaction with their walking and/or talking experience, and levels to which psychological needs were met during the walking sessions, as measured by the instruments administered before and after the practices.

## Definitions

### Variables

The two independent variables were the two different behavioral activities assigned to the participants. Study partners were assigned to participate in five sessions each of 30 minutes of walking and talking together, and 30 minutes of sitting and talking with each other.

I recorded three dependent variables. The first involved the reported levels of participants' mood, before and after each activity, as measured by scores on a brief mood scale. Second, I recorded reported levels of satisfaction with their walking and/or talking experience. Last, I recorded reported levels to which psychological needs were met during the walking sessions. Participants completed questionnaires before and after the practices for each activity.

### Operational Definitions

**Negative mood symptoms.** Sadness, hopelessness, and/or a feeling of worthlessness or low self-esteem characterize a persistent low mood. A mood disturbance is characterized by feelings of despair and discouragement, and may be accompanied by negativity and exaggerated feelings of dejection or emptiness. Negative mood symptoms may be accompanied by a loss of interest or pleasure in activities that would normally be enjoyable, and can adversely affect a person's sleeping habits, general health, and life in general (American Psychological Association [APA], 2013).

**Walking.** The practice of walking was defined as maintaining a pace of approximately 4 miles per hour; heart rates and breathing rates should be elevated slightly for the purpose of achieving the benefits of physical exercise (USDHHS, 2001).

The participants were expected to maintain an even pace, continuing to walk for the entire 30 minutes. The walking session was intended to be accompanied by a steady conversation of a supportive nature.

**Relational talk/supportive conversation.** I encouraged participants to promote a positive connection with their partners by using relational talk to build a mutually beneficial relationship. These conversations (relational talk) were defined as supportive, compassionate, caring, and helpful, involving questions which elicit self-disclosure, and are met with active listening. Honeycutt, Nasser, Banner, Mapp, and DuPont (2008) asserted that companionship support helps to distract people from their problems, and can facilitate positive affective moods. Time spent with others participating in recreational activities can reduce stress while providing affiliation and contact with others (Honeycutt et al., 2008).

## Assumptions, Scope, and Delimitations

### Assumptions

The primary assumption in this research was that both supportive conversation and physical exercise can result in an enhanced mood. A secondary assumption was that the combination of both activities may be effective in enhancing mood and in meeting psychological needs. I also assumed that the participants would offer support to each other during their discussions with each other, with hope for creating an experience analogous to a therapeutic session. I assumed that the act of walking for a half hour would have similar physiological benefits for all participants. Also, I assumed that the participants would honestly report the results of the various activities and would carefully use the instruments to reflect the psychological aspects being studied.

In addition, I assumed that the instruments chosen for this study would accurately measure the participants' moods, as well as their satisfaction with the practice of either sitting and talking or walking or talking.

**Scope and Delimitations**

Specific aspects of the research problem that I addressed in the study included the effects of physical activity on mood, as shown by the mood rating scale scores, to be taken before and after each activity. Because I measured mood ratings before and after walking/talking and sitting/talking, I was able to make comparisons between level differences for each type of activity. In addition, I measured the level of the participants' satisfaction with the experience after each activity; I then compared levels following sitting/talking against levels of satisfaction after walking/talking. These scales provided measurable valuations of mood and satisfaction, allowing me to evaluate the potential differences in scores to form conclusions about whether mood or satisfaction levels improved with the combination of physical activity and supportive conversation.

The third aspect that I addressed was the level to which psychological needs were being met during exercise with a partner. I measured the level after each session of walking and I then compared the level with the satisfaction levels and mood levels to analyze the potential relationship between a participant's psychological needs being met while exercising with a partner, and the mood and satisfaction levels that resulted.

Boundaries of the study are relevant because the participants were composed of people from various community locations in rural New York State, walking in various types of settings. Participants reported being generally physically and mentally healthy. I focused on adults who were able to walk and who were willing to meet and talk with

their partner once per week. In addition, the study was limited to English-speaking participants and is generalizable to only people who share the particular demographic characteristics of the participants chosen for the study.

The scope of the research extended to people of various ages and of varying levels of physical health; however, the practice of walking and talking required the ability to ambulate independently and to communicate verbally. My intention in this study was to reflect the effects of the intervention on people of average health, with no serious psychological issues or inordinate life stressors.

In terms of delimitations, I planned to intervene when necessary if made aware of factors that arose which could affect the study's legitimacy. I carefully explained the instruments in a supplementary information sheet, and I altered one instrument, with the author's permission, to better fit the study. I expected participants to be in communication with me by way of email, and to inform me of any difficulties or interference with the study.

## Limitations

### Methodological Limitations

Methodological limitations include the sample, which was composed of a relatively small, self-selected group who were volunteers, and who were heterogeneous in nature. Participants were volunteers and their qualifying partners from their local, rural communities in New York State. I screened the study partners with the same qualifying questionnaire. I expected the participants to vary in age, race, ethnicity, and cultural background, and also to vary in terms of levels of fitness, energy levels, and baseline mood levels. I expected the participants to vary in their level of interest in discussing

their lives or problems with their study partner. People who are inherently more introverted may have a different experience than a person who freely shares their thoughts and feelings and may therefore feel an increased level of release during this type of experience. The quality of the discussions was not a controlled measure; therefore, variability undoubtedly occurred in terms of the characteristics of the conversations being held, as perceived by the participants.

The study was limited in terms of the generalizability of the population, because it was necessary to exclude potential participants or chosen partners with any serious mental health issues or medical issues that would cause limitations in physical activity. Non-English-speaking participants and people who are reclusive were excluded, due to the necessary activities involved in the experience.

The study was relatively short-term in length, to be completed within 10 weeks, thus limiting the observations that may have been made in the process. A longer-term study might bring further nuance if some participants are slower to respond to the practice. The instruments I utilized were self-report questionnaires, which may have resulted in somewhat subjective scaling on the measures. The tools were chosen for the ease of completion in catering to participants' time constraints and desire for privacy, thus limiting the amount of information which might be collected from another population. The use of self-administered questionnaires to measure participants' moods, levels of satisfaction, and fulfillment of psychological needs may have limited the quality of information gathered. Although a more comprehensive depiction of these aspects may have been obtained via qualitative methods such as interviews, this study relied on the participants' reports of the results using Likert-like scales.

I provided supplementary guidelines to the participants designed to help formalize the experience. I provided potential topics of conversation, as well as guidance on how to complete the scales. These additional instructions may have helped to mitigate the possibility of the limitation of subjectivity or imprecise reporting on the self-report scales.

## Significance and Social Change

The present study is relevant due to potential for effect upon the high prevalence of physical illnesses and mood-related disorders associated with inactivity. Worldwide, approximately more than 5 million deaths annually are caused by inactivity (WHO, 2010). The costs involved in the health care needs resulting from both physical and mental illnesses could be substantially decreased with the general improvement of the health of the population. This important issue could be ameliorated by public health research supporting the implementation of prevention and treatment programs. The individual participants involved in the study could potentially have been affected positively by the practice of walking and talking, and practitioners who adopted and recommended the activities could effect positive change in their patients' lives (Burton et al., 2010). The health care industry would potentially benefit from decreased health care costs; public health policy might increase support for public funding of supportive infrastructure and community programs.

I proposed that that the general human condition improves through physical activity as well as through the practice of supportive conversation. This research supports a general lifestyle change movement, which could result in improved physical health and mental health of the participants. The results of this research may support

recommendations given by practitioners who promote positive lifestyle change. Burton et al. (2010) conducted a study to gauge the willingness and ability of psychologists to promote physical exercise as a facet of psychological treatment. They received 236 questionnaire responses, predominantly from female psychologists; results indicated that mental health workers are interested in promoting physical activity and providing general activity advice as part of their psychological treatment. Researchers stated that 83% of the respondents reported recommending physical activity for the purpose of enhancing well-being and managing psychological difficulties (Burton et al., 2010).

The potential positive social change implications stemming from this research include the addition to public knowledge gained, regarding the benefits of walking and talking. Programs may result from this knowledge, potentially improving the physiological and psychological health of the participants. The adoption of these programs by schools, hospitals, and clinics could prove to be cost-saving to society and health care systems, if lifestyle changes and resulting improvements are demonstrated. Burton et al. (2010) wrote that this gap in knowledge could be addressed simply by professional development activities; approximately 75% of their questionnaire respondents conveyed that they would be likely to attend a local workshop on the promotion of physical exercise as part of psychological treatment. Knowledge gained through this study may support public health policy and could potentially lead to funding for the aforementioned programs. Findings could be used to support further interest in clinical research on this intuitively useful approach to both physical and mental health practitioners.

## Summary

In this chapter, I have reviewed the background of the problem, which consists of the high rate of mood-related conditions and physical illness in the world's population, and the deleterious effect of inactivity. I reviewed the benefits of physical activity and of supportive conversation, including physiological, emotional, and social rewards. I put forth research questions; I established the purpose and nature of the study, and I outlined the theoretical framework. The chapter contained relevant definitions of the terms that I used in the study, as well as the assumptions, scope, and delimitations of the study. I reviewed limitations of the study, and measures to address these limitations; I explained the significance of the study.

In the next chapter, I will expound my purpose in the study, the prior findings of related studies, and the theoretical basis of the underlying assumptions, in terms of self-determination theory and the biopsychosocial approach. I will cover the related psychological understanding of the processes involved in the study in the literature review.

# Chapter 2: Literature Review

## Introduction

### Problem

The benefits of exercise on mood enhancement are illustrated by a plethora of research (Bock et al., 2014; Gallegos-Carrillo et al., 2013; Hays & Sime, 2014; Kassavou et al., 2014; Mata et al., 2012). The benefits of the relational and cathartic aspects of supportive conversation, in terms of symptom reduction and mood elevation, are enumerated in the research (Bäck-Pettersson et al., 2014; Landoll et al., 2011; Von Glahn, 2012). Wilson et al. (2008) wrote that scientists would be prudent to continue developing research programs to inform the interesting practical question involving human motivation to exercise. This knowledge could potentially lead to a better understanding of a concept that may help mitigate public health problems.

### Purpose

My purpose in this quantitative, treatment-control survey study was to examine the relationship between the practice of combining walking with talking and both the level of mood enhancement and the level of satisfaction with the experience. The research was based on the concept that biological, psychological, and social aspects can be combined in one practice, and the combined effects can be examined. Supportive conversation and positive relational interaction may be beneficial to mental wellness; in conjunction with physical exercise, this convention may help improve mood to a greater degree. The beneficial effects of talking with someone while simultaneously oxygenating cells and exercising may result in physiological improvements, including increased relatedness, competence, and mood. My purpose was to determine whether walking and

talking would result in higher mood rating scales and satisfaction rating scales than sitting and talking. My belief was that as participants add exercise to the already beneficial practice of sharing supportive conversation, their levels of satisfaction with the experience and mood ratings may increase. I proposed that people whose psychological needs in exercise are satisfied more fully may enjoy a higher level of satisfaction and may show a more improved mood after completion of the practice. I evaluated these potential effects in this study.

In this chapter, I will provide a literature review of the related variables and concepts; I will also establish the theoretical foundation for the study. I will then provide a summary and conclusions.

## Literature Search Strategy

The literature search strategy predominantly involved using Walden University's library, specifically EBSCOHost, primarily PsycInfo and PsycArticles, looking at peer-reviewed articles as well as seminal literature. I used the years between 2010 and 2015 in the initial search; however, I located older sources from the reference lists in newer articles. The terms that I searched included *exercise*, *physical activity*, *exercise therapy*, *psychotherapy*, *catharsis*, *supportive conversation*, *catharsis*, *mental wellness*, *biopsychosocial*, and *self-determination*. I also researched mood scales, satisfaction rating scales, physiological effects of exercise, and therapeutic alliance.

Because few current dissertations and little current research exist on this particular type of study, I made connections between the related topics for this original approach.

## Theoretical Framework

I used self-determinism theory and the biopsychosocial approach to provide a framework for the study. I will discuss the concepts of behavioral motivation associated with self-determination, with regard to the effects of walking and talking. I will consider the biopsychosocial in terms of their influence on mood and the related influences on combining social activity with physical activity.

### Self-Determination Theory

Self-determinism theory, put forth by Deci and Ryan (2008) purported that an individual's levels of autonomy, competence, and relatedness influence their motivation for behavior. *Autonomy support* refers to a person's perception of their social environment in terms of the options that are afforded, and the acknowledgement of an individual's opinions. A person's sense of autonomy is strengthened when he or she is the force behind the chosen behavior. *Competence* is described as the feeling of effectiveness in interactions with the social environment, and the experience of having opportunities to express one's capabilities (Ryan & Deci, 2008; Sweet et al., 2012). *Relatedness* denotes the interest in feeling connected to others and experiencing positive feedback, both of which could be enhanced by the practice of walking and talking together. The levels of these three components affect both intrinsic motivation and extrinsic motivation; enhanced levels can lead to greater self-determined motivation (Sweet et al., 2012).

Ryan, Legate, Niemiec, and Deci (2012) explained the concept of human autonomy through self-determination theory. They purported that when people recognize and accept the value of a given behavior, and they feel responsible for the enactment of

the behavior, they experience identified regulation. When they also bring the value and regulation of the behavior into coherence with other values and identifications, they experience integrated regulation, which is, according to Ryan et al. (2012), the most autonomous form of extrinsic motivation. When an individual knows the value of a behavior, and practices autonomous power, the individual feels volition in a way that drives him to act in accordance with abiding values. Several studies have shown that "the more autonomous the regulation of values, practices, and goals, the better one's performance and the greater one's well-being" (Ryan et al., 2012, p. 224).

In the context of this study, the participants were made aware of the value of the behavior, and acted autonomously, in terms of following through with participation. It was predicted that if they continued the behavior outside of the confines of the study, they would experience the benefits of acting in accordance with their values and moving toward improved psychological and physical health.

The inclusion of perceived behavioral control can also affect the likelihood of a target behavior. If an individual believes that walking and talking with another person will positively affect their emotional health, and the intention is to accomplish this goal, the likelihood of success is greater. Ryan and Deci (2008) explained the autonomy concept of self-determination theory, which purports that individuals are more likely to integrate learning and behavioral change when they have an internal sense of control over their actions; this autonomous engagement results in more positive outcomes. Also, social contexts, which fulfill innate psychological needs, promote well-being, and can enhance quality of life (Ryan & Deci, 2008). Creating the opportunity for this type of positive social experience could potentially provide insight into how this aspect can lead

to psychological needs being met, enhancement of affect, and higher levels of session satisfaction.

Wilson et al. (2008) studied the correlation between physical exercise and quality of life through the lens of self-determination theory, reviewing the collective evidence of the psychological and biomedical benefits of exercise. Their research corroborates the concept that the practice of physical activity can reduce psychological maladies and improve self-esteem and basic satisfaction with life. Self-determination theory is described as an "organismic-dialectic metatheory that accounts for the ongoing challenges faced by humans in terms of assimilating and adapting to social environments" (Wilson et al., 2008, p. 251). In terms of individuals' engagement in self-determined processes, behaviors which are more volitionally endorsed are associated with more authentic mental health and a higher likelihood of the continuation of the behavior. Research has shown that psychological needs which are fulfilled authentically within social contexts foster adaptation and integration, directly impacting well-being (Wilson et al., 2008).

Research has been conducted on the importance of basic psychological needs being met within exercise contexts, which has supported the belief that greater intrinsic motivation results from the satisfaction of these needs, specifically autonomy, competence, and relatedness. People are motivated by the sense of ownership of their behavior, the feeling of mastering a challenging task, and the meaningful connection with others in the related social environment (Ryan & Deci, 2008; Wilson et al., 2008).

I applied these concepts to the practice of walking and talking with the hypothesis that personal control, a sense of mastery, and a positive social connection could lead to

the participants' improvement in attitude, and more positive belief systems, hence the reduction in depressive or anxious symptoms. As people feel more in control of their lives, and use their power for the good of their bodies and minds, they are exerting their will to make the desired improvements. Also, as they predict that these activities will help them, they are putting into play the behavioral intention, hence, theoretically, improving attitude and mood.

In the current research, I measured levels of autonomy, relatedness, and competence, as participants who performed physical exercise with a walking partner experienced them. According to self-determination theory, as these beneficial aspects of life are increased, motivation to behave in ways that result in these benefits increases. As participants experienced the rewards of their behavioral choices, they would theoretically endorse the activity and be increasingly motivated to continue the practice, which may have simultaneously improved mood, physical health, and emotional wellness. I combined these concepts of self-determination theory with the influence of biopsychosocial components, as described in the next section.

**Biopsychosocial Theory**

This approach, which is founded by an inclusive scientific comprehension of biological, psychological, and sociocultural influences on behavior, was first described by George Engel in 1977 and has since become increasingly accepted and refined throughout the human services fields. Engel (2012) wrote of the importance of analyzing a patient's condition in psychological, cultural, and social as well as in physiological or biochemical terms. The boundaries between health and disease are unclear, as biological

components are diffused by psychological, social, and cultural considerations (Engel, 2012).

Hatala (2013) wrote that the biopsychosocial model has been widely endorsed within health psychology and medical sciences, as a framework for contemporaneous research and practice. The American Psychiatric Association and the American Board for Psychiatry and Neurology, along with several medical schools and health psychology graduate programs, recognize the biopsychosocial model as an accepted metatheoretical framework (Hatala, 2013).

The conceptualization infers that all aspects of a person's experience are relevant, including biophysical condition, cognitive processes, and social implications. I considered these interrelated processes in the current research; I predicted that physical activity would affect biological processes and that talking through problems would activate cognitive processes. The activity of partners walking together incorporated the social element. I predicted that combining all of these dimensions would help elucidate the interconnected nature of the aspects in terms of human functioning. Melchert (2015) asserted that behavioral health care practice can be informed by a unified scientific perspective on human psychology, as supportive research findings have rapidly accumulated.

In subsequent sections of this chapter, I will expound on the biological effects of exercise, the psychological benefits of cognitive processing, and the social implications of participating in relational interactions. Considering all of these facets of life through a metatheoretical lens may shed light on the complexity of the human condition while also expanding the understanding of how the facets interrelate.

# Literature Review

## Correlations Between Physical Exercise and Emotional Health

Studies have indicated positive correlations between physical exercise and emotional health (e.g., McGale et al., 2011; Oeland et al., 2010; Roman, 2010; Scheewe et al., 2013; Ströhle, 2009). Studies show that the relationship can be seen as bidirectional causation, whereby illness can be caused by inactivity, and inactivity can be a result or a consequence of illness. Oeland et al. (2010) explained the connections between physical fitness, physical health, and emotional health. A low level of physical fitness is associated with depression and anxiety, and a sedentary lifestyle has been shown to be more likely in people suffering from anxiety and depression, as well as in patients at risk of cardiovascular disease and hypertension. Inactive populations have a higher risk of developing these medical and emotional problems, and physical inactivity is an independent predictor of premature death (Oeland et al., 2010).

People with depression/anxiety disorders, as well as people suffering from common medical diseases, report a lower quality of life than physically active people; Oeland et al. (2010) conducted a study to investigate whether people with anxiety and/or depression could improve their quality of life through participation in a physical exercise program. They implemented a 32-week program with fifteen adult patients who met the criteria for anxiety or depressive disorders, using the Hamilton rating scales for anxiety and depression to determine the severity of their disorders. A structured activity regimen consistent with public health recommendations was used in this study, with the added recommendation to exercise at home, without the presence of the instructor. The participants were randomized into the two groups; the intervention group was involved in

two weekly sessions with an instructor, and the control group was advised to exercise on their own, without the instructor. Researchers found that this aspect of leadership was important in terms of the participants' motivation to exercise. The attrition rate was 40%, and the rate of compliance to treatment was 65%. Quality of life was shown to significantly increase in both control and intervention groups, with no significant difference between the groups (Oeland et al., 2010). The Hamilton anxiety and depression scale scores also decreased from baseline, showing a reduction in mental health symptoms, but also showed no significant difference between the two groups. Researchers admitted that the differences in baseline and post-study quality of life measurements may have been related to mere chance.

McGale, McArdle, and Gaffney (2011) conducted a study with approximately 100 sedentary men between the ages of 18 and 40 who were not receiving psychiatric treatment. The men were split into three groups; one group participated in an exercise-based intervention, and the second group participated in a team sport, guided by cognitive-behavioral therapy. The third group was a control group. The men's depressive symptoms were measured by using a depression inventory over ten weeks. The results suggested that exercise interventions are efficacious in reducing depressive symptoms for the population; the pre-intervention to post-intervention scores on the depression inventory improved by 52% in the exercise-based group, and by 45% in the team sport activity group that was guided by cognitive-behavioral techniques (McGale et al., 2011). The difference for the control group was 1%. The researchers purported that exercise is a viable treatment that can complement pharmacological interventions, as the effects of

exercise can be seen before the latency period of medication, and the positive effect of exercise on well-being can persist beyond the end of treatment.

Hays and Sime (2014) reported on the results of a meta-analysis of controlled studies of the impact of physical exercise on self-esteem and physical self-perception. A large percentage (78%) of the studies noted positive changes in some aspects of self-esteem or physical self-concept. In a clinical study, researchers assigned a 16-week aerobic exercise program, participants with symptoms of major depression showed significantly improved self-esteem (Hays & Sime, 2014).

Ströhle (2009) wrote that meta-analytic studies show large effect sizes in trials involving exercise training and reduction in depression. Summarizing the growing body of research led to the conclusion that exercise programs were effective in reducing depression, and that programs of at least nine weeks in length were associated with larger improvements in depressive symptoms. Roman (2010) reported that several studies have shown that both aerobic exercise and progressive resistance training as monotherapies have resulted in greater than 60% remission rates, based on pre- and post-intervention depression rating scale scores.

Baker et al. (2008) reviewed the program called 'Walking for Wellbeing in the West.' The results of this study demonstrated that the twelve-week walking program, in a community-based sample, was an effective way to reduce sedentary behavior and increase positive affect. The authors reiterated that there was a need for additional cross-cultural, randomized controlled trials to further examine the effectiveness of walking programs (Baker et al., 2008). In this study, I will combine walking with supportive conversation to determine the potentially exponential benefits of both practices.

**Supportive Conversation**

Psychologists have enumerated the therapeutic or beneficial effects of a supportive alliance. The experience of participating in supportive conversation, or relational talk, has been shown to have a positive influence on individuals' state of mind, enhancing self-confidence and inner strength (Bäck-Pettersson et al., 2014). A supportive discussion is characterized by the acknowledgement of feelings, a considerate attitude, and respect for the other; these facilitate closeness between people. This act of sharing can be cathartic, which is defined by the feeling of relief resulting from talking about troubles and 'letting it all out.' Catharsis is one of the elements of psychotherapy that has been shown to facilitate improved emotional health; there is a common perception that talking about problems makes people feel better (Landoll et al., 2011). The benefits of talking through one's problems and having someone listen attentively to these issues have been enumerated and are the basis of psychotherapy. Von Glahn (2012) explained that a significant goal of any therapeutic experience is to bring feelings, thoughts, and attitudes into the open, thereby helping to process the individual conflicts and problems.

Linden and Westram (2011) wrote that specific psychotherapy interventions are rare, but general verbal interactions are an important and indispensable part of any therapeutic process. They purported that perhaps the most beneficial part of the psychotherapeutic process is a generally supportive encounter, as opposed to the use of explicit theories or models of psychotherapy. Von Glahn (2012) explained that the facilitative condition for a cathartic release is that sufficient support and acceptance is provided; a nondirective, unforced manner of discussion is supportive of the healing

process. In this vein of thought, theoretically, the act of two people discussing their personal experiences in a supportive manner can be analogous to a counseling session.

**Emotional release.** Hays and Sime (2014) purported that the experience of walking and talking can provide an opportunity for clients' emotional and cognitive catharsis, and that the exercise can work as a catalyst for free association, for introspection, and for more lucid thinking. They explain that some clients respond to side-by-side conversation with more candor than face-to-face therapy or conversation, and that the informal nature of walking together facilitates 'greater emotional release' (Hays & Sime, 2014). This study is designed to provide an opportunity for participants to walk and talk together, experiencing the potentially beneficial combination.

**Benefits of exercise**

Myriad studies have shown the benefits of physical exercise on emotional wellness (Hays & Sime, 2014; Kassavou et al., 2014; McGale et al., 2011; Oeland et al., 2010; Roman, 2010; Scheewe et al., 2013; Ströhle, 2009). The question remains in the field as to why this safe, non-intrusive, non-pharmacologic intervention is not considered an "evidence-based, prescriptive regimen" for individuals suffering from depression (Roman, 2010). There is a plethora of evidence of the mood-enhancing qualities of physical exercise, including the effects of neurotransmitters (e.g., Jerstad, Boutelle, Ness, & Stice, 2010), the positive feelings associated with improved physical health, and the sense of accomplishment. Poor physical fitness and less healthy lifestyles are described as characteristic of patients with depression and/or anxiety; congruently, regular exercise is associated with lower levels of anxiety and depression (Oeland et al., 2010). Mata et al. (2012) also report findings of treatment studies which have found that participating in

prescribed structured exercise significantly reduces depressive symptoms and increases positive affect. In the following sections, I will review the current research and describe the effects that physical activity has been shown to cause on various facets of life.

**Psychological benefits.** Mood disorders can be severely debilitating to sufferers. Mata et al. (2012) explained that the criteria for a diagnosis of a depressive disorder implicate a dysregulated affect as a necessary symptom. Exercise has been shown to increase positive affect, characterized by feelings of happiness, contentment, fulfillment, and the feeling that life is worthwhile (Bock et al., 2014; Burton et al., 2010; Gallegos-Carrillo et al., 2013; Hays & Sime, 2014; Kassavou et al., 2014; Mata et al., 2012; McGale, McArdle, & Gaffney, 2011; Oeland et al., 2010; Roman, 2010; Scheewe et al., 2013; Ströhle, 2009). A positive affect may include future orientation, and the feeling of excitement associated with looking forward to something in life. It involves self-esteem, self-concept, and confidence. Negative affect may present as sadness, hopelessness, and a feeling of worthlessness (APA, 2013). A mood disturbance is characterized by feelings of despair and discouragement, and may be accompanied by exaggerated feelings of melancholy, dejection, or emptiness that are inappropriate and out of proportion to reality; the manifestations range from decreased motivation and inability to concentrate to severe psychosomatic alterations of body functions and may represent symptoms of a variety of mental and physical conditions (APA, 2013). Low affect may be characterized by negative thoughts, feeling ‘down in the dumps,’ and self-doubt (APA, 2013). People who are suffering from negative affect may attempt to bring themselves out of their funk by using alcohol, drugs (prescribed or illicit), or other unhealthy practices such as smoking or sexual compulsions. I propose that using exercise for mood elevation could

effectively replace these non-health-promoting practices for many people, improving physical and emotional health, and simultaneously reducing the risk for other health problems caused by the alternative (temporary) mood enhancers.

McGale et al. (2011) explained the psychological mechanisms involved with the practice of exercise, suggesting that perceived self-worth and mood can be positively influenced through physical fitness and skill mastery. According to Mata et al. (2012), exercise has been shown to increase participants' capacity to be distracted from negative thoughts and to improve retrieval of positive thoughts.

Wolff et al. (2011) reviewed several decades of research that focused on the use of physical activity for the treatment and prevention of mental disorders; these studies demonstrate a significant negative correlation between exercise levels and the onset of mental disorders. Exercisers were shown to perceive a higher quality of life, and experience social reinforcement, mastery, improved coping skills, and/or a more internal locus of control (Wolff et al., 2011). Kassavou et al. (2014) conducted a study to examine the predictors of maintenance of participation in walking groups; constructs of self-efficacy were studied, as well as the participants' satisfaction with their walking experience. Researchers found that increased 'recovery self-efficacy' (defined as a person's optimistic beliefs about their ability to resume behaviors after a period of relapse) predicted maintenance in walking groups (Kassavou et al., 2014). Their findings suggested that when people received satisfaction from more than one source, such as improved physical and social outcomes, they were more likely to maintain the behavior.

**Physiological benefits.** Physiologically, exercise causes neurochemical changes in monoamine and endorphin levels, which may elevate or regulate mood (McGale et al.,

2011; Scheewe et al., 2013). In fact, research has shown that, in terms of effectiveness for treatment of depression, exercise is comparable to antidepressant medication and better than a placebo (Ströhle, 2009). Exercise has been shown to be effective as monotherapy or as an addition to pharmacotherapy for the treatment of mild, to moderate, to treatment-resistant major depression (Roman, 2010). This knowledge suggests that the neurobiological effect of psychotropic medication is similar to the neurochemical process exerted by physical exercise. Additionally, physical exercise causes oxygenation of cells, which promotes general health. Mata et al. (2012) explained that physical exercise stimulates the growth of nerve cells.

Wolff et al. (2011) explained that bouts of exercise cause biochemical and physiological changes which affect mood via the neurochemistry of serotonin and endorphins; also, the release of brain-derived neurotrophic factor (BDNF) resulting from exercise is a beneficial neuroprotective function. Studies also indicate that physical activity provides an anxiolytic effect, and alters stress reactivity by affecting the hypothalamus-pituitary-adrenal axis (Wolff et al., 2011).

**Social benefits.** Research also demonstrates that people benefit from the social support aspect of exercising together, and that the experience of social inclusion partially mediates the risk for depressive symptoms (McGale et al., 2011). Hatala (2013) asserted that social factors, such as familial and personal relationships and an individual's social support system, are implicated in the stages of pathogenesis. The biopsychosocial model purports that the social aspect of life should be considered in terms of its implications on psychological and physical health. The current research helped to determine the level to which the social aspect of exercising together added to the elevation of mood when

combined in the form of simultaneous walking and talking.

In the design of this study, I provided an experience for participants to practice a series of weekly walking/talking or sitting/talking while paying attention to the ways that they are affected by these practices. I asked participants to report how they felt emotionally, how satisfied they were with the social experience of discussing their lives with their partners, and how much the exercise portion of the experiment met their psychological needs. I asked participants to quantitatively gauge their level of satisfaction with their experiences, their mood levels, and aspects of self-determination, including their feelings of competence in reaching goals, relatedness with exercise partners, and autonomy with regard to their exercise practices.

**Physical exercise as mental health treatment**

While much of the literature advocates exercise and social interaction as demonstrable aspects of a healthy lifestyle, literature exists to support each of these being introduced as an individual methodical treatment strategy. Substantiation of the efficacy of physical exercise for the improvement of overall health has been accumulating for decades (Roman, 2010). According to Hays and Sime (2014), an ever-increasing body of evidence shows that physical exercise is effective for the treatment and prevention of various psychological disorders.

Results of numerous studies have emphasized the correlation between physical exercise and mood elevation in various populations; the National Institute of Health conducted research on nearly 7000 adults to discern the connection between exercise and depressive symptoms, finding an inverse relationship between fitness and depression (Roman, 2010). The body of work on the topic is great; a review of 37 meta-analyses of

this relationship was conducted in 2004, showing the positive correlation between exercise and mental wellness, and the work continues (Roman, 2010). Hays and Sime (2014) summarized research studies that found the combination of talk therapy and exercise to be more effective than cognitive therapy alone. Physical activity has been shown to be an essential element in the enhancement of psychological functioning (Hays & Sime, 2014; Ströhle, 2009).

Ströhle (2009) explained the general belief within the psychological community that physical exercise has positive effects on mood, anxiety, and general well-being. Studies show the antidepressant and anxiolytic activity of exercise. Findings also include evidence that exercise has a protective effect against the development of mental disorders, and can reduce the risk of developing depression (Ströhle, 2009). Scheewe et al. (2013) conducted research on the benefits of physical activity on mental health, reporting that since 'exercise therapy' is already an established treatment for depression, it could be used in the effort to reduce symptoms of schizophrenia. There is a high prevalence of comorbid depressive symptoms among individuals with schizophrenia; researchers found that the practice of exercise for one to two hours per week reduced both symptoms of schizophrenia and symptoms of depression to a greater extent than occupational therapy and actually reduced the need of care in patients (Scheewe et al., 2013). This research supports the idea that physical exercise is an effective way to improve psychological health and has been compared to other forms of therapy in terms of efficacy.

Researchers have made additional comparisons in terms of established forms of psychotherapy versus the practice of physical activity. Studies have shown that the

practice of physical exercise is actually as effective as cognitive-behavioral therapy for symptoms of depression; significant positive findings have been indicated for different types and intensities of exercise (McGale et al., 2013; Mead et al., 2008).

Hays and Sime (2014) reported that some research has shown that the combination of exercise and talk therapy was even more effective than cognitive therapy alone, in an equivalent experience; the exercise component was considered an essential element in terms of improving psychological functioning. They explain that exercise is therapeutic as it is recognized as relieving psychological distress and being good for a person's general well-being. Reviews of numerous studies that have addressed the utilization of exercise for reducing anxiety and depression support the hypothesis that physical exercise is a potent therapeutic intervention (Hays and Sime, 2014). The biochemical mechanisms associated with exercise are psychotherapeutic, and are similar to the effects of psychotropic medications (Hays & Sime, 2014).

Trivedi, Nieuwsma, and Williams (2011) examined the utility of psychotherapy for patients with treatment-resistant depression, and found that exercise resulted in substantial benefits as an augmentation treatment for depression.

## Measurements of Related Concepts

In the effort to design a study that would lead to knowledge and understanding of the connection between the practice of walking and talking and the related concepts, including mood levels, levels of satisfaction, and the extent to which psychological needs are met during exercise, I used three instruments.

**Brief Mood Introspection Scale**

I used the brief mood introspection scale (Mayer & Gaschke, 1988) to assess the participants' mood levels before and after each session. I chose this scale for its simplicity and validity; the participants were allowed to quantify their current levels of positive mood states, such as liveliness, happiness and contentedness, as well as aspects of negative mood states such as sadness, gloominess, drowsiness, or being fed up. Chevalier (2015) utilized the brief mood introspection scale (BMIS) in a double-blind study involving the effects of 'Earthing' or 'grounding' which is bringing the body in contact with the Earth and neutralizing positively charged free radicals; the results showed statistically significant improvements in pleasant, relaxed, and positive mood ratings in the 'grounded' participants. The researcher found a significant decrease in both tired and negative scales when compared to the un-grounded, or 'sham-grounded' participants (Chevalier, 2015). The researcher recommended that further studies be conducted to examine the effects of grounding on mood and health, and suggested that 'Earthing' might be a simple way to help ameliorate detrimental effects of negative moods on psychological state and general health (Chevalier, 2015).

In the current research, I utilized the BMIS to compare the mood states before and after each discussion, for each participant. I compared the difference between the pre- and post-practice scores, to determine the difference, if any, between the two practices of walking/talking or sitting/talking. I predicted that this would further illuminate the connection between exercise and mood levels.

**Session Rating Scale**

Miller and Duncan designed the session rating scale to elicit client-directed feedback on therapy sessions, and to measure aspects of the therapeutic relationship, consensus about goals, and the client's overall view of the experience (Miller, Duncan, & Johnson, 2002). Janse, Boezen-Hilberdink, van Dijk, Verbraak, and Hutschemaekers (2014) posited that obtaining client feedback can be useful in increasing the effectiveness of therapy, and that discussing potential improvements with the therapist can improve progress. The session rating scale (SRS) is widely used in the Netherlands; Janse et al. (2014) investigated the reliability and validity of the Dutch translation of the scale and compared results to previous Dutch and American studies. While the SRS exhibited adequate test-retest reliability and internal consistency, the concurrent validity was limited (Janse et al., 2014).

For the present study, I chose this scale for its simplicity and used it to reflect the general satisfaction felt by participants after their discussion with their partner, in terms of the quality of their alliance, and the level to which the participants worked on what they wanted to during the discussions. The author of the instrument gave approval to use the scale in this non-traditional way, and agreed that it would be appropriate for use in the current research. I used this scale to measure the level of satisfaction each participant experienced after each half-hour conversation. I analyzed the scores on this satisfaction scale to determine if any difference existed between the walkers and the non-walkers. I also compared the resulting scores with scores on the other instruments. I predicted that these comparisons would show the relationship, if any, between the quality of participants' discussions with their partners and their resulting moods.

**Psychological Needs in Exercise Scales**

Wilson and Rogers (2008) conducted research to examine the concept that psychological need satisfaction is an important part of motivation regulating exercise behavior. Their study involved a 12-week exercise class; participants completed the self-report instrument, the psychological need satisfaction in exercise (Wilson, Rogers, Rodgers, & Wild, 2006). The scale captures perceptions of autonomy, competence, and relatedness during an exercise session. Through the lens of Self-Determination Theory (Deci & Ryan, 2008), Wilson and Rogers (2008) looked at the relationships between the level of reported psychological need satisfaction and self-determined exercise regulation; results indicated that increased need fulfillment was correlated with exercise motivation (Wilson & Rogers, 2008). The results of their study suggested that the psychological need satisfaction in exercise instrument displays psychometric properties indicating that the scale is useful in examining the role of psychological need satisfaction and its connection with self-determined exercise motives, in a manner consistent with self-determination theory (Wilson & Rogers, 2008).

The basic psychological needs in exercise scale (BPNES), designed by Vlachopoulos and Michailidou (2006), is similar to the psychological need satisfaction in exercise instrument (Wilson et al., 2006) in content, as they both measure perceptions of autonomy, competence, and relatedness during an exercise session. I used the BPNES in the present study to reflect the walking participants' thoughts and beliefs about exercising, and to further assess the quality of the relationships between the walking partners. I asked participants to report higher scores as they felt that their psychological needs were more fully met; walkers reported on the levels to which the walking practice

felt like a positive social experience, helped them meet their physical goals, and whether they felt that their choices and interests were being honored.

The factors considered in the scoring of this instrument are associated with levels of autonomy, relatedness, and competence. Specifically, the items that ask about whether the participants feel that they are exercising in ways that are consistent with their interests, and if their exercise choices are an expression of their identity, measure the concept of autonomy. The items that involve the participants' closeness with their partners, the quality of their communication, and the friendliness between them evaluate the concept of relatedness. Items that entail the participants' level of success in performing their exercise, their ability to meet the requirements of their exercise goals, and the extent to which they are making progress toward their goals evaluate the participants' level of competence. I compared scores on this scale against mood scores and session satisfaction scores to determine the extent to which the related concepts were correlated. By using this analysis, I intended to determine if participants who experienced a higher level of the physical and psychological benefits of exercising with a partner also experienced a better mood and were more satisfied with the experience.

## Summary

In this chapter, I provided the literature search strategy used in preparing for the research, the theoretical foundation for the study and a literature review of the related variables and concepts. I enumerated the benefits of the separate practices of physical activity and supportive conversation, including the physiological, psychological, and social aspects. I identified and described the instruments used as the measurements of the related concepts were. I hypothesized connections between these concepts and the

practices involved in the study. I described the gap that this study intends to address with a supportive literature review.

## Conclusions

Conclusions I have drawn from the literature review include the belief that physical exercise is beneficial to physical health and emotional wellness. Supportive conversation has been shown to improve psychological and social functioning. An increased sense of autonomy, competence, and relatedness provides people with improved mood, motivation, and self-esteem. I predicted that the combination of physical activity and relational talking would result in improved mood and increased levels of session satisfaction. I also predicted that participants would experience an increased sense of autonomy, competence, and relatedness as they chose to participate in this beneficial practice. I suggest that higher mood levels and better session outcomes would result from higher levels of self-worth, which could result as psychological needs are met during exercise.

In the present study, I addressed the existing gap in the literature, in terms of the potential added benefits of the combination of two activities, physical exercise and supportive conversation, which have been shown to yield positive results in physical and mental wellness. I predicted that the simultaneous practice of walking and talking would result in increased mood elevation and session satisfaction, as shown by the participants' ratings on the self-report scales.

# Chapter 3: Research Method

## Introduction

My purpose in this study was to examine the effects of the combination of physical exercise and relational talk between pairs of partners. My intention in this study was to determine the effects of the combination of walking and talking as compared to the effects of sitting and talking, as measured by a mood scale, an outcome satisfaction scale, and a scale which measured the walkers' psychological needs met by exercise. I proposed that the participants' moods and outcome satisfaction may be increased when combining exercise and supportive conversation.

In this chapter, I include the research design and rationale, and I describe how the design choice is consistent with research designs needed to advance knowledge in the discipline. I will explain the methodology of the study, and I will define the population and the procedures for sampling, recruitment, participation, and data collection. I will provide information on the instrumentation, and I will outline a data analysis plan. I will describe potential threats to validity. I include ethical procedures and potential concerns.

## Research Design and Rationale

Mood levels, session ratings, and the satisfaction of psychological needs being met during exercise were measured via questionnaires to compare between two different independent variables. The independent variables were the activities assigned to the participants. These involved either partners sitting together while carrying on a supportive discussion, or partners walking together and engaging in supportive discussion. The dependent variables, measured by the participants' scores on the questionnaires, were reports of mood levels and session satisfaction. This was a

quantitative, treatment-control survey study with a 2 x 2 repeated measures design. The design choice is consistent with research designs needed to advance knowledge in the discipline (Jaccard, 1998); quantitative measurements of various aspects were collected and compared to determine if correlations existed between the variables. The scientific process of collecting data while controlling for moderating variables resulted in quantifiable results, which were summarized in the effort to expand the knowledge about the connections between physical exercise, supportive conversation, mood levels, and the level of participants' experiential satisfaction.

## Methodology

### Population

The target population, for my purpose in this study, consisted of adult members of rural New York State communities. I chose participants, who were volunteers, via convenience sampling; my intention was to represent the general population of rural New York State communities with various demographic characteristics.

### Sampling Procedures

I recruited participants from public places within areas surrounding the researcher's place of residence and the area surrounding my internship site in rural New York State. Participants consisted of volunteers and their chosen qualifying study partners, of various demographic characteristics. It was likely and preferable that these chosen partners were people known and trusted by the participants. I provided all initial potential participants with a screening questionnaire, which included general questions about the person's physical and mental health, and their availability for the research. This questionnaire is provided as Appendix B. Participants were adults who were able to

identify a safe place where they could take a half-hour walk (e.g., a park, a mall, or a track) and were required to be able to identify a potential study partner who they believed met these requirements. I excluded volunteers who reported that they experienced significant mental health problems or physical limitations that may have interfered with their ability to complete the study. I informed the participants about the nature of the study and asked if they would be interested in participating in a 10-week program. When I chose each initial participant, I asked him or her to elect a partner, who could be a friend, a colleague, or a neighbor. The chosen partner was preferably a person with whom the participant had never been in a therapeutic or adversarial relationship. I intended for the study partner to be a person with whom the participant could easily meet in person for ten sessions during a 10-week period, and was preferably someone with whom the participant felt comfortable talking.

A power analysis resulted in the estimation that for a one-tailed test at $p < .05$, to detect an effect size of .30 with a power of at least .80, the study would require a sample of at least 52 participants for a valid study of this nature (Kraemer & Thiemann, 1987). This resulted in two groups of 26 participants, carrying out the activities in the order decided on by me. I replaced participants who withdrew; this resulted in an extended time frame of the study.

**Procedures**

**Recruitment.** I posted flyers describing the proposed study in local coffee shops, grocery stores, health clubs, and meeting places, and recruited participants through email when interested parties responded. In some cases, potential participants who witnessed me posting the flyer approached me in person, and the process began at that point. In

each case, I screened the first participant of each couple via questionnaires that I will describe in subsequent sections. I sent these out through email, and participants returned them to me through email or the postal service; if the participant qualified for the study, I asked him or her to select a study partner, as described above. The qualifying participant asked their chosen partner for their permission to give me their email address. If the potential participant gave permission, I sent an electronic message to the potential partner, who I then screened through emails for appropriateness of participation. I notified participants who qualified and agreed to the activities involved in the study and I sent a packet of information including the informed consent (Appendix A) as well as additional documents to be completed and returned to me. Initially, my committee and I agreed that if after three months of attempting to recruit participants, I had not found 52 qualifying participants, I would conduct the analysis with the data collected from all qualifying participants at that time. However, my committee subsequently recommended that I extend the time frame in the effort to collect and gather complete data from a total of 52 participants.

**Informational and demographic questionnaire.** Each participant completed a demographic questionnaire. I intended to collect each participant's demographic characteristics (age, gender, ethnicity, educational level, etc.) as well as information related to the participants' general physical and mental health. I did not require demographic information; however, I did require each participant to answer the subsequent questions on the questionnaire. I asked participants, via the questionnaire, if they had any medical or physical ailments or conditions that would affect their ability to walk for thirty minutes per week. I asked participants questions pertaining to mental

health levels. I asked participants to share if they were currently experiencing mental health issues that would, in their opinion, cause a diminished capacity to complete the activities of the study. I asked participants if they could identify a safe place where they would be able to walk for a half hour per week for five weeks. I provided a copy of the questionnaire as Appendix B.

**Informed consent.** In the informed consent for this study, I provided general information regarding the research study, including an explanation of the procedures of the study, the potential risks and benefits, and the voluntary nature of the study. I explained confidentiality practices. I provided contact information. I obtained a signature from each chosen participant. I provided a copy of the informed consent form as Appendix A.

**Participation**. I informed participants of the nature of the study, and gave each participant the questionnaires, instruments, and guidelines to review. I split the participants into two groups through random assignment. I assigned the first group the practice of sitting and talking with each other, and I assigned the other group to walk and talk together for thirty minutes, once per week. The groups (partners) then switched and performed the opposite practice for five weeks. Researchers have recommended that an adequate time frame for programs is at least nine weeks in length (Ströhle, 2009). Based on the average time frames used in the studies reviewed in the literature review, the current research involved a ten-week program including five weekly practices of walking and talking, and five weekly practices of sitting and talking, completing the scales as needed.

Research has shown that the experience of participating in supportive conversation has had a positive influence on individuals' state of mind, improving self-confidence and inner strength (Bäck-Pettersson et al., 2014). In order to promote a supportive, positive experience for the participants, I provided discussion guidelines, including suggested topics of conversation. I encouraged all participants to interact in generally positive and supportive ways. I prompted participants to practice active listening and to refrain from judgment during their discussions with each other. In the guidelines, I listed queries that may have been useful in terms of opening up meaningful conversations. For example, I suggested that individuals begin the conversation with a question about their partner's past week and the efforts he or she has made toward personal goals, or the barriers to their goals.

I encouraged participants to choose to discuss their personal relationships, life stressors, or other relevant topics. I did not expect the supportive discussions to hold all of the characteristics of a psychotherapy session, but designed them to be generally encouraging, personal conversations during which the study partners shared their thoughts and feelings. In the informed consent, I included instructions to discontinue the session if any emotional or physical discomfort arose. I asked the participants to report any inappropriate or uncomfortable interactions to me. I encouraged individuals to walk together for thirty minutes at a brisk but comfortable pace; I advised participants that they should be able to carry on a conversation, but also slightly raise their heart rate for the purpose of oxygenating their cells. I asked the participants to evenly divide sessions to ensure that each participant was given equal time. I provided these guidelines as Appendix J.

**Data collection.** I expected participants to correspond with me via email or postal mail, sending all necessary forms to in a contemporaneous manner. I asked each participant to make an agreement with his or her chosen partner, then set up and share a schedule of the ten planned meetings. Each meeting began with the brief mood introspection scale (Mayer & Gaschke, 1988), on which the participants quantitatively describe their mood. The participants then carried out the thirty minutes of talking (either while sitting or walking), and concluded with the post-practice questionnaires. I asked all participants to rate their level of satisfaction with the experience, using the session rating scale (Miller, Duncan, & Johnson, 2002). Walkers also recorded the level to which their psychological needs in exercise were met, using the basic psychological needs in exercise scale (Vlachopoulos & Michailidou, 2006). I asked participants to send all of the completed instruments to me via email or through the United States Postal Service, following each weekly meeting, or to send an email informing me that the sessions were being carried out as planned and that there were no deleterious effects.

I expected the entire process to take a full hour each week. I expected the participants to commit to a half hour every week to walk with their partner at their chosen location or to sit and talk with their partner. Additional time was needed to complete the appropriate questionnaires, and then to send these to me. The participants were asked to inform me if anything interfered with the validity of the study, such as a change in the person's mental status, an interpersonal conflict with their partner, or a scheduling issue that required an extension to the study. If a conflict or situation arose which warranted the discontinuation of participation in the study, I sent the participants a message of appreciation for volunteering. I also requested in the letter that the participants answer a

few questions about the experience, for the purpose of data collection. I included a questionnaire with the message of appreciation; I asked the participants who needed to cease their involvement in the study to let me know the reason for the discontinuation and to answer other questions related to their experience with the study. I provided this letter and questionnaire as Appendix K. When participants discontinued their involvement, I continued to attempt to recruit additional participants, extending the time frame of the study. In all instances of participants' discontinuation, study partners also discontinued. I provided participants who elected to discontinue their involvement in the study with the link to an online mental health service: http://psychcentral.com/resources.

At the end of the ten discussions, I confirmed that all questionnaires had been received, and actively sought any missing scales. I contacted each participant by email to complete a general debriefing. I offered to make information available to participants expressing interest regarding the results of the research, and the conclusions drawn from the results. I expressed appreciation for the participants' generous participation and gave each participant twenty dollars (United States currency) for their participation.

## Instrumentation

### Scales

I used the following instruments to measure the effects of the activity. Publishers offered these instruments for free usage, for research purposes.

**Session rating scale.** I used the session rating scale (SRS V.3.0) for this study (Miller, Duncan, & Johnson, 2002). The SRS is a four-item instrument that measures elements of the therapeutic alliance between the client and the therapist. This scale assesses the client's general satisfaction with the approach and topics discussed during

the discussion. It was administered to every participant for self-scoring after each discussion. Although this scale is generally used to rate clients' satisfaction with the relational aspects of the connection with their therapist, I used the scale in this study to measure the quality of the alliance between study partners. It served to measure the relational aspects between partners, including how supported, encouraged, and understood participants felt during their discussions. This instrument measured general satisfaction with regard to feeling heard and respected by the person with whom the person was talking, the overall feeling about the suitability of the approach of the discussion, and whether the session 'felt right' as opposed to feeling as if there was 'something missing' during the discussion. These qualities of a traditional therapy session can be likened to a structured conversation between two laypersons, in terms of the aspects of supportive conversation, which I outlined for the participants. The author of the instrument acknowledged that the intended use for this research, albeit not the customary use, was applicable and appropriate.

Duncan et al. (2003) conducted research to study the reliability and concurrent validity of the SRS. Results included a high degree of internal consistency and concurrent validity, as well as a positive correlation between the SRS and other alliance measures such as the helping alliance questionnaire (HAQ-II). The authors indicated that a working copy of the SRS may be downloaded and used for free at Miller's Talking Cure website (Duncan et al., 2003). I contacted Scott Miller to ask permission for the slightly altered use of the instrument; the author gave permission, with the expectation that this researcher apply for the license to use the instrument. I included the license and the electronic message giving permission as Appendices F and G.

The first item on the scale evaluates whether the client felt heard, understood, and respected during their discussion. The rating score increases as the level of perceived respect and empathy increases. The second item reflects the level to which the client was able to work on chosen goals, or to discuss the topics desired. The more the individual is encouraged to speak about the topics relevant to their lives and to work on their goals, the higher the rating. The third element measures the level to which the client believes the general method or approach is a good fit. This is indicative of the general satisfaction with the supportive conversation, either while sitting or walking. The fourth and final feature of the scale is the appraisal of the overall experience. The participant is asked to consider if the session generally felt 'right' or if something was missing from the session. The rating increases with the broad sense of involvement or satisfaction with the meeting. I expected this measure to help assess a person's general satisfaction with the discussion, as well as the resulting mood of the person. As a person feels more respected and understood, talks about their personally chosen topics, and feels that the method fits well with their needs, more pleasant feelings may result. In alignment with self-determination theory, I predicted that participants would feel increased autonomy in the process if they worked on the things they wanted to work on or discuss, and would feel an improved sense of relatedness if the participant felt heard, understood, and respected by their partner.

I asked each participant to use the SRS to measure the effect of the experience of the discussion, with or without walking. Each participant, reflecting four aspects of the session, completed this rating scale after each meeting. I provided the mood rating scale as Appendix E.

**Brief mood introspection scale.** I used the brief mood introspection scale (BMIS), developed by Mayer and Gaschke (1988), to assess all participants' mood states before and after each session to quantify each participant's levels of several different aspects of mood. The items measured included such feelings as liveliness, calmness, drowsiness, contentedness, and gloominess. The scale measured individual's general mood separately on this instrument, from very unpleasant to very pleasant. Participants self-scored using Likert scales; I assigned appropriately weighted numerical values to scores for purposes of analysis (Mayer & Gaschke, 1988).

Totan (2014) conducted a study with 316 students, designed to determine the reliability and validity of the BMIS. The instrument was translated into Turkish for the research, and tested against the self-esteem scale (otherwise known as the self-liking/self-competence scale), the emotional approach coping scale, and the flourishing scale. Results included a positive association between a positive mood that provides pleasure and a high level of self-esteem (Totan, 2014). These aspects were also positively associated with flourishing and emotional approach coping; the instrument was found to be valid and reliable, in the Turkish form. According to Mayer and Gaschke (1988), although the brief mood introspection scale had good factorial validity for all of its scales, this scale did not show good reliability in the arousal-calm subscale. The remaining three subscales showed good reliability; the authors suggested that if researchers required higher reliability, they could modify the response scale by increasing the steps from four to seven, spacing the anchors two steps apart, as reliability increases somewhat when steps increase (Mayer & Gaschke, 1988). I considered this but did not utilize this method to improve the rating scale.

In alignment with biopsychosocial theory, the combination of physical movement, along with the social activity of holding a conversation with a partner, may intertwine to affect the participants' mood and satisfaction levels. The known positive effects of physical exercise on mood, along with the known benefits of positive social experiences, may generate an enhanced result.

Authors of this instrument also offer test content to be reproduced and used for non-commercial research and educational purposes without seeking written permission. Distribution must be controlled to only the participants engaged in the research or enrolled in the educational activity (Mayer & Gaschke, 1988). I provided the scale and permission as Appendix C and Appendix D.

**Basic psychological needs in exercise scale.** I used the basic psychological needs in exercise scale (BPNES) by Vlachopoulos and Michailidou to reflect the walking participants' thoughts and beliefs about exercising, and to assess the quality of the relationships between the walking partners (Moreno Murcia, Gonzalez-Cutre Coll, Garzon, & Rojas, 2008; Vlachopoulos & Michailidou, 2006; Wilson & Rogers, 2008). The psychometric properties of the BPNES have received support; robust predictive validity findings were shown by the large extent of invariance of structural path coefficients (Vlachopoulos & Michailidou, 2006).

The BPNES is a domain-specific instrument intended to gauge the extent to which participants' needs for competence, autonomy, and relatedness are met by physical exercise (Vlachopoulos & Michailidou, 2006). I examined these concepts, in the context of self-determination theory (Ryan & Deci, 2008), to determine the effects of these social-contextual supports when combined with exercise. Theoretically, if a person's

basic needs are satisfied through an activity, enhanced psychological functioning results, as well as improved mood and self-determined motivation (Ryan & Deci, 2008; Vlachopoulos & Michailidou, 2006).

In a study of approximately 1000 participants, designed for scale calibration and validation purposes, resulted in demonstrations of adequate internal consistency, factor structure, and predictive validity; stability of the BPNES scores over four weeks was acceptable (Vlachopoulos & Michailidou, 2006). The authors suggested that further research attempts could promote knowledge regarding ways that exercise participants can fulfill the innate needs of autonomy, competence, and relatedness, which may result in positive outcomes for people involved in exercising with others (Vlachopoulos & Michailidou, 2006).

The participants completed the BPNES after each walking session. It is comprised of eleven items that are related to the participant's exercise experience. Authors offer test content to be reproduced and used for non-commercial research and educational purposes without seeking written permission. Distribution must be controlled to only the participants engaged in the research or enrolled in the educational activity (Moreno Murcia et al., 2008). This study fulfilled these parameters of use; however, I sought permission and was granted permission via electronic message. I provided this correspondence as Appendix I.

For my purpose of this study, participants filled out the questionnaire referring to the practice of taking the half-hour walk with their study partner. Some of the items reflected the individual's feelings about their choices and interests with regard to exercise. Some items related to the aspects of working toward a goal and being capable of

meeting the requirements of succeeding in that goal. Some items reflected the quality of the person's relationship with their study partner, and the level of communication that the participants experienced. I used this scale to determine the level to which the person's general social and psychological needs were being met during the exercise activity. I predicted that the participants whose ratings were higher on this scale would also report higher levels of session satisfaction, and feasibly, higher mood levels. I provided the scale as Appendix H.

## Operationalization

Dependent variables in the current research were the scores on the individual scales. I collected the quantitative data from each scale and translated into a score.

### Session Rating Scale

Participants completed the session rating scale (SRS) after each discussion. This scale uses a 10-centimeter line on which the client was asked to place a hash mark on four items, indicating the level to which each objective was reached. For my purpose of this quantitative research, I correlated each resulting hash mark to a numeric response, according to the number of millimeters the participant's mark indicated. Higher numbers represented better results with regard to satisfaction with the experience. I added the corresponding scores on the four items, resulting in the final score on the post-activity scale. I then entered that number into a spreadsheet as the week's post-session rating.

### Brief Mood Introspection Scale

I used the brief mood introspection scale (BMIS) to assess all participants' mood states before and after each session to quantify each participant's levels of several different aspects of mood. This scale uses a set of letters as indicators for the participants'

feelings. The participant circles ‘XX’ if he or she ‘definitely does not feel’ the relevant mood state. An ‘X’ indicates that they ‘do not feel’ the mood description. A ‘V’ indicates that they ‘slightly feel’ the specific mood adjective, and a ‘VV’ indicates that they ‘definitely feel’ the mood being measured. I translated these into numerical values for analysis. For the ‘positive’ mood states, the number ‘1’ indicated that the participant definitely did not feel the mood state, and ‘4’ was assigned if the participant definitely felt the emotion/mood state. I reversed the numbers for the ‘negative’ mood states. Specifically, the negatively denoted mood states that I reversed were: Sad, Tired, Gloomy, Jittery, Drowsy, Grouchy, Nervous, and Fed Up. Higher numbers represented more elevated positive mood results. I added together the corresponding scores on the sixteen items, resulting in the final score on that pre-intervention or post-intervention scale. I then entered both numbers into a spreadsheet as the week’s pre- and post-session ratings.

**Basic Psychological Needs in Exercise Scale**

Participants completed the basic psychological needs in exercise scale (BPNES) after each walking discussion to reflect the walkers’ thoughts and beliefs about exercising, and to assess the quality of the relationships between the walking partners. The participant circled a numeral between 1 (‘I don’t agree at all’) and 5 (‘I completely agree’), using eleven items to indicate the level to which their psychological needs were met during the exercise/discussion. Higher numbers represented better results with regard to satisfaction of needs. I then summed the scores on eleven items, resulting in the final score for that experience. I entered that number into the spreadsheet to compare and analyze the scores at the conclusion of the ten sessions.

## Data Analysis

The data was analyzed via the Statistical Program for the Social Sciences (SPSS), Version 23.

### Research Questions

**Research Question 1:** Is there a mood response difference between a half hour of walking and talking versus a half hour of sitting and talking?

***Null hypothesis*** **($H_0$1)**: The practice of walking and talking will not result in statistically significant differences in mood changes, as measured by the brief mood introspection scale, when compared with the results from sitting and talking.

***Alternate hypothesis*** **($H_a$1):** The practice of walking and talking will result in statistically significant differences in mood changes as measured by the brief mood introspection scale, when compared with the results from sitting and talking.

**Research Question 2:** Is there a difference in the level of satisfaction between a half hour of walking and talking versus a half hour of sitting and talking?

***Null hypothesis*** **($H_{02}$):** There is no statistically significant difference between the effects of the practice of sitting and talking and the practice of walking and talking, as measured by the session rating scale.

***Alternate hypothesis*** **($H_{a2}$)**: There is a statistically significant difference between the effects of the practice of sitting and talking and the practice of walking and talking, as measured by the session rating scale.

**Research Question 3:** When participants enjoy aspects of a positive exercise experience, as shown by higher ratings on the basic psychological needs in exercise scale, is there a mood response difference?

***Null hypothesis* ($H_{03}$)**: There is no statistically significant correlation between the results of the basic psychological needs in exercise scale and the brief mood introspection scale.

***Alternate hypothesis* ($H_{a3}$):** There is a statistically significant correlation between the results of the basic psychological needs in exercise scale and the brief mood introspection scale.

**Research Question 4**: When participants enjoy aspects of a positive exercise experience, as shown by higher ratings on the basic psychological needs in exercise scale, is there a difference in the level of satisfaction with the experience?

***Null hypothesis* ($H_{04}$):** There is no statistically significant correlation between the results of the basic psychological needs in exercise scale and the session rating scale.

***Alternate hypothesis* ($H_{a4}$):** There is a statistically significant correlation between the results of the basic psychological needs in exercise scale and the session rating scale.

**Analysis Plan**

I used statistical analyses to compare the scores of all instruments. I entered the data into the SPSS program. I used an independent-samples t-test to compare the means between two unrelated groups on the same continuous, dependent variable. I used simple linear regression and Pearson correlation analysis to investigate the relationships between the independent and dependent variables in research questions three and four.

I used analysis of variance (ANOVA) in this research as subjects were measured on the same dependent variable that was administered more than once. A factorial ANOVA is the appropriate statistical analysis when the purpose of research is to assess if mean differences exist on one continuous repeated dependent variable between two or

more discrete groups (Jaccard, 1998). In a mixed factorial design, at least one independent variable is measured among subjects and at least one other independent variable is measured within subjects. A mixed factorial ANOVA design compared scores between groups and within groups on the various scales before and after each intervention during participation in a ten-week program.

This quasi-experimental, two-group design assessed the differences between pre- and post-intervention scales. The independent variables were the activities assigned to the participants. These entailed either partners sitting together while carrying on a supportive discussion, or partners walking together and practicing supportive discussion. The dependent variables were the scores on the questionnaires, also referred to as instruments.

I collected the brief mood introspection scales, session rating scales, and basic psychological needs in exercise scales from the two different groups of participants, for each week of participation. The two different groups practiced the two separate types of interventions (walking/talking and sitting/talking) in opposite order. I expected that this would result in more accurate results than using only one group who practiced both interventions. This was due to the possibility that participants may have experienced an improvement in mood or session satisfaction as they became more comfortable and open with each other. By assigning the interventions in opposite order to half of the partners, I attempted to control for this possible interaction. I analyzed scores from the three different scales in various ways. I compared the pre-activity mood scales of all participants with their post-activity mood scales, and measured the differences in the scores. I compared the session satisfaction scale scores with their corresponding mood scales. I compared mood scale scores and the session satisfaction scores from the

sitting/talking groups with the scores from the walking/talking groups. I analyzed the psychological needs scale scores from the walkers and compared against their mood scales and session scales. I considered and looked at all of these scales objectively, using independent t-test, ANOVA, simple linear regression, and Pearson correlation, and analyzed them on the different levels. I compared the scores from the mood scales and the satisfaction scales; I compared the scores from the BPNES to the former scales, to determine if relationships could be found between them.

## Ethical considerations

I gave careful consideration to this study and any possible effects it may have on the participants. Each participant was treated with respect and consideration for the entire process of the study. The informed consent form clearly outlined the nature and risks of the study. There were minimal potential risks for participation in the study, including the risk of getting hurt physically, or being negatively affected emotionally. The signature of each participant on the informed consent form indicated that the conditions and possible risks of the study were agreed upon and understood.

I obtained institutional permissions including Institutional Review Board approvals before beginning the study. Ethical concerns related to data collection include the possibility of the appearance of bias against excluded groups. Exclusion criteria, although necessary for the study reliability, could be considered prejudicial against individuals with poor mental health or physical mobility.

I maintained strict confidentiality; no participant's personal information will ever be used or released for any reason. In any report that I might publish, no information will make it possible to identify a subject. I informed the participants that they could

withdraw at any time, for any reason, with no adverse consequences. When a participant did decide to withdraw from the study, I asked the study partner if he or she wanted to begin with another partner, or if they would prefer to withdraw as well. I attempted to recruit replacement participants in the same manner as the original process, for a reasonable time period.

I asked participants to maintain strict confidentiality in terms of the information their partners shared during the study. The signature of each participant on the informed consent form indicated that this was agreed upon and understood.

Confidentiality of data continues to be maintained, as only I have access to the records. Anonymity was maintained in the reporting process, as participants were assigned identifying numbers to be used in place of names. This included the results that would be made available to participants at the conclusion of the study. Records will be stored electronically with password protection for a minimum of five years; records will be destroyed following that period.

## Summary

In this chapter, I restated my purpose of the study and the study variables, identified the research design and rationale, and described the methodology of the research. I described the population and procedures for recruitment, participation, and data collection. I defined the process of obtaining informed consent, demographic questionnaires, and instruments. I outlined debriefing and follow-up procedures. Instrumentation and operationalization of constructs were explained, and validity and reliability were established. I provided the data analysis plan, and restated the research

questions and hypotheses. The ethical considerations were enumerated, and the storage of collected data was described.

In the next chapter, I will report the results of the study, describing the time frame and recruitment and response rates. I will present any discrepancies in data collection from this chapter's plan. Baseline descriptive and demographic characteristics of the sample will be reported. I will report if any challenges were present that prevented the implementation of the plan. I will report any adverse events with serious consequences.

Descriptive statistics will be reported, and statistical assumptions will be evaluated. I will report statistical analysis findings.

# Chapter 4: Results

## Introduction

My purpose in this study was to determine the effects, if any, of the combination of physical exercise and relational talk between pairs of partners. My objective in this research was to examine the effects of the combination of walking and talking as compared to the effects of sitting and talking, as measured by a mood scale, a satisfaction scale, and a scale that measured the walkers' psychological needs met by exercise. I hypothesized that the participants' moods and outcome satisfaction may increase when combining exercise with supportive conversation.

## Research Questions

**Research Question 1:** Is there a mood response difference between a half hour of walking and talking versus a half hour of sitting and talking?

***Null hypothesis* ($H_0$1)**: The practice of walking and talking will not result in statistically significant differences in mood changes, as measured by the brief mood introspection scale, when compared with the results from sitting and talking.

***Alternate hypothesis* ($H_a$1):** The practice of walking and talking will result in statistically significant differences in mood changes as measured by the brief mood introspection scale, when compared with the results from sitting and talking.

**Research Question 2:** Is there a difference in the level of satisfaction between a half hour of walking and talking versus a half hour of sitting and talking?

***Null hypothesis* ($H_{02}$):** There is no statistically significant difference between the effects of the practice of sitting and talking and the practice of walking and talking, as measured by the session rating scale.

***Alternate hypothesis* ($H_{a2}$)**: There is a statistically significant difference between the effects of the practice of sitting and talking and the practice of walking and talking, as measured by the session rating scale.

**Research Question 3:** When participants enjoy aspects of a positive exercise experience, as shown by higher ratings on the basic psychological needs in exercise scale, is there a mood response difference?

***Null hypothesis* ($H_{03}$)**: There is no statistically significant correlation between the results of the basic psychological needs in exercise scale and the brief mood introspection scale.

***Alternate hypothesis* ($H_{a3}$):** There is a statistically significant correlation between the results of the basic psychological needs in exercise scale and the brief mood introspection scale.

**Research Question 4**: When participants enjoy aspects of a positive exercise experience, as shown by higher ratings on the basic psychological needs in exercise scale, is there a difference in the level of satisfaction with the experience?

***Null hypothesis* ($H_{04}$):** There is no statistically significant correlation between the results of the basic psychological needs in exercise scale and the session rating scale.

***Alternate hypothesis* ($H_{a4}$):** There is a statistically significant correlation between the results of the basic psychological needs in exercise scale and the session rating scale.

In this chapter, I will describe the data collection process, including the time frame involved in the recruitment process and the response rates. I will provide information related to baseline descriptive and demographic characteristics of the sample. I will include a section in which statistical analysis findings are organized by research

questions and hypotheses. These findings will include exact statistics, confidence intervals, and effect sizes. I will provide a summary of the answers to each research question. I will provide figures illustrating the results of statistical analyses as Appendix L. I will provide transitional material to introduce the prescriptive material to be included in Chapter 5.

## Data Collection

In the course of 25 weeks, I ultimately collected complete data sets from 52 participants. The recruitment process involved me posting flyers at local businesses and parks in rural New York State areas; the flyers included adhesive notes with my mobile phone number and email address for potential participants to remove from the flyer and take with them. I responded to emails, text messages, and phone calls from potential participants, and screened potential participants with the questionnaire (Appendix B). I asked potential participants who responded to the flyers to complete the questionnaire, and to read, sign, and return the informed consent form (Appendix A). The recruitment of several participants resulted from their witnessing the posting of the flyers in fitness clubs and asking me about the study. I advised all potential participants to call, text, or email me with any questions regarding the study. I fielded and responded to several calls, text messages, and email messages, which resulted in either the potential participant's agreement to continue with the study, or the declination to participate. Eighty-nine participants initially contacted or approached me, several of which declined to participate or discontinued their involvement in the course of the study.

I provided encouragement and prompting throughout the process, regularly asking participants to send completed instruments and checking in with participants to ensure

that the activities were being carried out with no deleterious effects. I sought and obtained more complete data when missing, whenever possible. At the completion of each participant's involvement, I expressed appreciation to the participant and offered the monetary incentive for his or her involvement in the research.

No discrepancies existed from the plan for data collection process presented in Chapter 3, with the exception of the extended period of time that was required to obtain a sufficient number of participants.

## Baseline Descriptive and Demographic Characteristics

The sample consisted of 52 adult participants, less than 50% of whom provided complete demographic descriptions. There were 30 female participants and 22 male participants who completed the study. However, fewer participants reported the remaining demographic characteristics. Therefore, it is not possible to provide a complete, valid description of the level to which the sample is representative of the population of interest or how proportional it is to the larger population. Demographic frequencies are shown in Appendix L, reflecting the information that was completed by participants.

## Research Completion

I carried out the research activities as planned and described in Chapter 3. Participants reported no adverse events related to the study. When participants decided to discontinue the research activities, I sent a message of appreciation and the discontinuation questionnaire (Appendix K). Few participants who discontinued chose to complete the discontinuation form but assured me that the reason they decided to discontinue the activity was not due to any adverse reaction to the activities related to the

study. Explanations for discontinuation of participation in the study included time constraints and difficulty scheduling appointments with study partners. I averaged missing data points when unattainable and when appropriate. This occurred rarely when an item was missed or omitted. I calculated missing item scores by averaging the scores given by the participant to similar items on the instruments.

## Results

The following paragraphs will provide the statistical analysis findings pertaining to each of the four research questions and hypotheses. Because of the multiple comparisons, a Bonferroni correction was used. In order to claim significance, an alpha value of .002 was required.

### Research Questions

**Research Question 1.** Is there a mood response difference between a half hour of walking and talking versus a half hour of sitting and talking?

*Null hypothesis* ($H_{01}$). The practice of walking and talking will not result in statistically significant differences in mood changes, as measured by the Brief Mood Introspection Scale, when compared with the results from sitting and talking.

*Alternate hypothesis* ($H_{a1}$). The practice of walking and talking will result in statistically significant differences in mood changes as measured by the Brief Mood Introspection Scale, when compared with the results from sitting and talking.

Analyses of the pre-activity and post-activity mood score differences were conducted. Potential scores on this instrument range from 16 to 64. The average pre-activity score for walking participants was [$M = 54.20$]. The average post-activity score on the mood scale was [$M = 56.37$]. The standard deviation of the mood scale for pre-

walking was [*SD* = 8.2] and for post-walking it was [*SD* = 7.6]. For sitting participants, the average pre-activity score was consistent with walkers [*M* = 54.09]. The average post-activity score was [*M* = 55.89]. The standard deviation of the mood scale for pre-sitting was [*SD* = 8.0] and for post-sitting the standard deviation was [*SD* = 7.6].

Results of the independent samples t-test showed that the difference between walking mood scores (*M* = 2.16, *SD* = 4.86) and sitting mood scores (*M* = 1.80, *SD* = 3.95) was not statistically significant at the .002 level of significance, $t = 0.931$, $p > .002$. ANOVA results also showed that no statistically significant differences existed between walking session mood scores and seated session mood scores, $F = .87$, $p = .35$, $p > .002$. This revealed that there was no difference between the mood scores in the two groups. Therefore, the null hypothesis is retained and the alternative hypothesis is rejected. Results are provided in Appendix L.

**Research Question 2.** Is there a difference in the level of satisfaction between a half hour of walking and talking versus a half hour of sitting and talking?

*Null hypothesis* ($H_{02}$). There is no statistically significant difference between the effects of the practice of sitting and talking and the practice of walking and talking, as measured by the Satisfaction Scale.

*Alternate hypothesis* ($H_{a2}$). There is a statistically significant difference between the effects of the practice of sitting and talking and the practice of walking and talking, as measured by the Satisfaction Scale.

The Session Rating Scale (SRS) was utilized to assess the participants' level of satisfaction with the experience of sitting or walking with a partner while holding a semi-structured (supportive) conversation. The minimum possible score on the SRS is zero and

the maximum total score is 400. The average total score for walkers was [$M$ = 338.8] with a standard deviation of [$SD$ = 53]. The average total score for sitting sessions was [$M$ = 337.4] with a standard deviation of [$SD$ = 55].

Results of the independent samples t-test revealed that the difference between walking session rating scores ($M$ = 338.8, $SD$ = 53.15) and sitting session rating scores ($M$ = 337.4, $SD$ = 55.39) was not statistically significant at the .002 level of significance ($t$ = 0.306, $p$ > .002). These results were further supported by an ANOVA which showed that no statistically significant differences existed between walking session rating scores and seated session rating scores, $F$ = .09, $p$ > .002. This revealed that there was no difference between the session rating scores in the two groups. Therefore, the null hypothesis is retained. Results are provided in Appendix L.

**Research Question 3.** When participants enjoy aspects of a positive exercise experience, as shown by higher ratings on the Basic Psychological Needs in Exercise Scale, is there a mood response difference?

*Null hypothesis* ($H_{03}$). There is no statistically significant correlation between the results of the Basic Psychological Needs in Exercise Scale and the Brief Mood Introspection Scale.

*Alternate hypothesis* ($H_{a3}$). There is a statistically significant correlation between the results of the Basic Psychological Needs in Exercise Scale and the Brief Mood Introspection Scale.

The Basic Psychological Needs in Exercise Scale (BPNES) was utilized to measure the level to which the participants' psychological needs were met by the exercise portion of the study activity. For example, participants were asked to respond to items

related to their opportunities to make choices, their opinion of their ability to make progress toward their goals, and the general quality of the relationship and communication with exercise partners. Potential scores on this instrument range from 11 to 55. The average final score on the BPNES was [$M$ = 48] with a standard deviation of [$SD$ = 6.4]. In order to address research question three, BPNES scores were compared with Brief Mood Introspection Scale (BMIS) scores.

To investigate the association between the BPNES scores and differences in mood scores, a simple linear regression was conducted. The predictor was the BPNES score and the outcome was the change in BMIS scores. The predictor variable was not found to be statistically significant [$B$ = 0.096, 95% C.I., $p$ > .002]. There was a very small increase in mood score as related to an increase in the BPNES score; however, the model explained only 1.6% of the variability [R-squared = 0.016]. Therefore, 98.4% of the variability is unexplained by the model.

These results were further supported by a Pearson correlation analysis, which showed that there was a small, non-significant correlation between the scores on the mood scale and the BPNES scores, $r$ = .13, $p$ > .002. Therefore, the null hypothesis is retained. Results are provided in Appendix L.

**Research Question 4.** When participants enjoy aspects of a positive exercise experience, as shown by higher ratings on the Basic Psychological Needs in Exercise Scale, is there a difference in the level of satisfaction with the experience?

*Null hypothesis* ($H_{04}$). There is no statistically significant correlation between the results of the Basic Psychological Needs in Exercise Scale and the Session Rating Scale.

*Alternate hypothesis* ($H_{a4}$). There is a statistically significant correlation between the results of the Basic Psychological Needs in Exercise Scale and the Session Rating Scale.

In an effort to answer the question of whether levels of psychological needs being met by physical exercise correlated with levels of session satisfaction, scores from the BPNES were compared with SRS scores. To investigate the potential association between the BPNES scores and session rating scores, a simple linear regression was conducted. The predictor variable was [BPNES score] and the outcome variable was [Change in SRS score]. The predictor variable was found to be not statistically significant [$B = 0.531$, 95% C.I., $p > .002$], indicating no association between psychological needs scores and session rating scores. The model explained approximately 0.4% of the variability [R-squared = 0.004]. Therefore, 99.6% of the variability is unexplained by the model.

These results were further supported by a Pearson correlation analysis, which also showed that no statistically significant correlation existed between the results of the Basic Psychological Needs in Exercise Scale and the Session Rating Scale, $r = .06$, $p = .30$; $p > .002$. Results revealed that increased Basic Psychological Needs in Exercise Scale scores were not associated with increased Session Rating Scale scores. Therefore, the null hypothesis is retained. Results are provided in Appendix L.

## Summary

In this chapter, I described the data analysis process and results. Data analysis resulted in the failure to reject the null hypothesis for all research questions. No statistically significant differences in mood scores or session scores were found when comparing walking and sitting sessions. Research questions three and four are answered by retaining the null hypothesis, as no statistically significant correlations were found

between BPNES scores and session satisfaction rating scores or mood scores. In chapter 5, I will summarize the findings and discuss the implications of the conclusions with regard to future research and social change.

# Chapter 5: Discussion, Conclusions, and Recommendations

## Introduction

In this chapter, I will restate my purpose in the study. I will summarize and interpret the findings of the current research and will reflect on the linkages between findings of previous studies. I will review the limitations of the study and provide recommendations for future research. I will also discuss the implications of the results with regard to future research and social change, followed by conclusions.

## Purpose

My purpose of in this study was to determine whether the combination of physical exercise and relational talk between pairs of partners had a significant effect on participants' mood levels or session satisfaction. The objective of my research was to determine the effects of the combination of walking and talking as compared to the effects of sitting and talking, as measured by a mood scale, a satisfaction scale, and a scale which measured the walkers' psychological needs met by exercise.

## Summary of Results

Results of the study showed no significant differences in mood scores or session scores when comparing walking and sitting sessions. The results suggested that both activities (sitting/talking and walking/talking) had a small positive effect on mood; however, the effect was similar after either activity. When comparing the participants' satisfaction with their experiences, scores for sitting and talking were similar to scores for walking and talking. Increases in mood level were not significantly correlated with higher levels of psychological needs being met by exercise. Similarly, when higher levels of

psychological needs were met by exercise, no increase in session satisfaction was evident.

## Interpretation of the Findings

### Previous Research Findings

Findings from studies cited in the literature review indicated that introducing a physical exercise routine has resulted in significant increases in positive psychological aspects such as perceived quality of life, as well as diminished levels of depression. In the literature review, I also highlighted the benefits of supportive conversation for symptom reduction and mood elevation.

### Physical Exercise

Research conducted by Oeland et al. (2010) investigated whether people could improve their quality of life through participation in a physical exercise program. They found that participants' perceived quality of life significantly increased in both control (exercising at home) and intervention (exercising with an instructor) groups, with no significant difference between the groups (Oeland et al., 2010). In this study, researchers also showed decreased anxiety and depression scale scores after the 32-week exercise program. Although researchers acknowledged that the differences in baseline and post-study quality of life measurements may have been related to chance, the reduced symptoms of anxiety and depression were indicative of the efficacy of exercise in reducing symptoms of mental disorders.

Research by McGale et al. (2011) also suggested that exercise interventions are efficacious in reducing depressive symptoms; the preintervention to postintervention scores on the depression inventory improved by 52% in the exercise-based group, and by

45% in the team sport activity group, as opposed to the 1% difference for the control group.

Hays and Sime (2014) reported the results of a meta-analysis of controlled studies of the impact of physical exercise on self-esteem and physical self-perception. A large percentage (78%) of the studies noted positive changes in some aspects of self-esteem or physical self-concept.

Ströhle (2009) reported that meta-analytic studies show large effect sizes in trials involving exercise training and reduction in depression. Summarizing the growing body of research led to the conclusion that exercise programs were effective in reducing depression. Roman (2010) also wrote that several studies have shown that both aerobic exercise and progressive resistance training as monotherapies have resulted in greater than 60% remission rates.

Although the current research was not designed to measure the effects of exercise on mental health in the same way as previous studies, I intended to compare the differences between sitting/talking and walking/talking, in terms of mood states and session satisfaction. I intended to elucidate the effects of combining the two activities but my research did not show large effect sizes. Results did not indicate significant differences between mood scale score differences after sitting/talking versus walking/talking. No significant correlation existed between participants' fulfillment of psychological needs during exercise and mood scale scores, indicating that physical exercise did not have a significant effect on mood enhancement when it was considered by participants to fulfill certain psychological needs.

**Supportive Discussion**

The experience of participating in supportive conversation has been shown to have a positive influence on individuals' state of mind, enhancing self-confidence and inner strength, resulting in symptom reduction and mood elevation (Bäck-Pettersson et al., 2014; Landoll et al., 2011; Von Glahn, 2012). It has been suggested that spending time with others, participating in recreational activities, can reduce stress while providing affiliation and contact with others (Honeycutt et al., 2008).

In my study, I intended to provide an opportunity for participants to hold a supportive discussion during physical activity. In the study design, I encouraged participants to reflect on the quality of the relationship with their study partner, and the level of communication that the participants experienced. The basic psychological needs in exercise scale (BPNES) was used to determine the level to which the participants' general social and psychological needs were being met during their exercise activity. I correlated scores with corresponding scores on the brief mood introspection scale (BMIS). The results did not show a significant correlation.

**Current Research Interpretation**

**Findings.** Findings from the current research neither clearly confirm nor disconfirm the findings of studies found in the review of the literature described above. My focus in this study was to investigate the differences between sitting/talking and walking/talking, and to consider whether the gratification of psychological needs via exercise was associated with mood changes and/or session satisfaction levels. The results of the initial group of analyses in which I evaluated the set of hypotheses suggested that adding physical exercise to supportive conversation did not have a significantly different

effect on individuals' mood or their satisfaction with the experience, as compared with sitting and talking.

**Physical exercise and supportive discussion.** Since several studies have shown significant beneficial effects of exercise on mood (Bock et al., 2014; Hays & Sime, 2014; Gallegos-Carrillo et al., 2013; Mata et al., 2012), I predicted that physical activity would result in mood enhancement. Also, since a nondirective manner of discussion is believed to be supportive of the healing process (Von Glahn, 2012), I expected positive benefits from the introduction of this activity. I provided the facilitative condition for a cathartic release in the experience, which was combined with physical activity; I expected positive outcomes as a result of the simultaneous combination. The simultaneous practices of supportive discussion and physical movement, as encouraged in the guidelines of this study, were predicted to have a significantly more beneficial effect on overall mood and satisfaction levels than discussion or exercise alone. I postulated that the beneficial effects of supportive conversation would increase mood and satisfaction levels to a higher level when combined with physical exercise.

However, the differences in mood scale scores and session satisfaction scores were not significantly different between sitting sessions and walking sessions. In the current research, I did not intend to merely measure the level of mood enhancement after activities; rather, in this study, I intended to look at the differences in mood and session satisfaction between walking/talking and sitting/talking. Results did not show significant differences, indicating that participants in this study were similarly affected by both sets of activities. These results suggest that adding exercise to supportive discussion did not

significantly change the quality of the experience for participants in this particular study, when considering mood scores and session satisfaction.

**Psychological needs.** In this study, I examined the fulfillment of psychological needs in the context of self-determination theory (Ryan & Deci, 2008), to determine if the effects of these social-contextual supports, when combined with exercise, would result in greater mood enhancement and/or session satisfaction. The basic psychological needs in exercise scale (BPNES) measures the extent to which participants' needs for competence, autonomy, and relatedness are met by physical exercise (Vlachopoulos & Michailidou, 2006). I postulated that if participants' needs were satisfied through the activity of walking and talking, enhanced mood and session satisfaction would result.

Results of my analyses showed no significant correlation between the fulfillment of psychological needs met by exercise and differences in mood scores. Analyses also resulted in no correlation between session satisfaction levels and increased fulfillment of psychological needs met by exercise.

**Potential Explanations**

Further scrutiny of the outcomes of this research could result in several additional potential explanations, outlined in the following sections.

**Time frames.** It is possible that the relatively short length of the study (five weeks of each activity) was insufficient to capture the effects of the activities. Programs of at least nine weeks in length have been recommended as an adequate time frame by at least one researcher (Ströhle, 2009). I limited the current study to the length of ten weeks in the effort to aid recruitment with limited resources. It is possible that a longer period of time may provide more useful results, and potentially yield results that could better

differentiate between the effects of the two different sets of activities. It is also possible that if participants' relationships were to develop over a longer period of time, a deeper understanding of each other could foster more meaningful discussion, which could possibly have yielded different results. It is possible that collecting data over a longer time period could help to show the potential long-term effects of the practice of combining physical exercise with supportive discussion. It is also possible that the relatively short time period of each "session" that was dedicated to each partner (fifteen minutes) was further mitigated by the process of taking a walk, and was not adequate in terms of allowing the participants to enjoy the cathartic benefits of supportive conversation. I chose this aspect of the study design in the effort to achieve recruitment without requiring the participants to spend an inordinate amount of time or effort.

**Level of exertion.** It is possible that the experience of walking and talking was not significantly different than the experience of sitting and talking due to the relatively low level of exertion put forth by the participants, and that the pace at which participants walked was not sufficient in terms of gaining the physiological benefits of exercise. The guidelines for physical exercise, put forth by the CDC, recommend moderate-intensity exercise for approximately thirty minutes, five days per week (CDC, 2016). It is unknown whether participants reached the level of exertion that would be considered moderate-intensity. I also postulate that since participants were not matched or qualified by levels of physical fitness, partners varied in terms of the level of exercise necessary to cause a biopsychosocial change. One partner may have been more physically fit than the other in the participating couples, and this may have resulted in one partner feeling more pressured than the other. These differing levels of exertion could have caused different

results than if the exercise was specifically prescribed for each individual to reach and maintain a certain heart rate, for example. For my purposes in this study, the practice of walking was defined as maintaining a pace of approximately 4 miles per hour; heart rates and breathing rates should be elevated slightly for the purpose of achieving the benefits of physical exercise (USDHHS, 2001; CDC, 2016). However, these data were not specifically measured during this study, due to limited resources and the effort to create a relatively simple routine for the participants. Collecting physical exertion specifics such as heart rates during the activity may have provided meaningful data. It is possible that insight could be gained by scientific analyses of levels of physical exertion compared with scores on instruments.

**Aspects of self-determination.** Although I did not directly address the theoretical model of self-determination discussed in Chapter 2 in this study, I examined aspects of this model. Specifically, I measured aspects of self-determination theory, including self-efficacy, competence, and autonomy, via questions on the basic psychological needs in exercise scale. Data analyses showed no significant correlation between scores on the BPNES and scores on the mood scale differences; it is possible that the design of the study minimized the potential for participants to experience the maximal level of self-determination. Specifically, it is possible that participants, in the effort to make joint decisions on the locations and times of their meetings, compromised their preferences in the process, thereby reducing their sense of autonomy and self-efficacy. Theoretically, if a person's basic needs, such as the feeling of competence, are satisfied through an activity, enhanced psychological functioning results, as well as improved mood and self-determined motivation (Ryan & Deci, 2008; Vlachopoulos & Michailidou, 2006).

It is possible that each participant may have experienced an enhanced sense of fulfillment if he or she had been afforded the option to choose when and where to exercise. This could potentially have resulted in scores that reflected higher levels of competence, autonomy, and relational connection. Enhancing participants' psychological need fulfillment could have correspondingly improved their overall session ratings. The study was designed to provide a relatively simple experience shared by two participants simultaneously. However, it is possible that assigning one participant per couple the autonomy to make decisions could have affected the results meaningfully.

**Biopsychosocial considerations.** Biopsychosocial aspects were studied by intertwining biological, psychological, and sociocultural influences, then measuring differences in participants' reported effects. However, the biopsychosocial model discussed in Chapter 2 was not directly addressed in this study. Each of these aspects was involved in the activities in this study, but the levels to which they were met likely varied to some degree between participants. First, as previously mentioned, since the level of exercise was not scientifically measured, it is unknown whether or not the exercise portion of the activity was sufficient to cause a significant biological change for participants. Introducing and utilizing the equipment and processes necessary to measure heart rates and walking speeds would not have been feasible with the current study design. Further, psychological effects of the activities also varied greatly between partners, as subjectivity is expected.

The social aspect of the activities, although an important part of the research, may have differed between partners in levels of quality. While one participant may have felt completely supported by a partner, another may have felt somewhat unsupported.

Potentially, these two participants could generate a similar score on the BPNES due to the variety of questions on the instrument. It may be useful in future research to utilize an additional questionnaire that further clarifies the properties of the social aspect of the experience. Researchers could more carefully measure these facets in future research to look at the connections and correlations between them in combination.

## Limitations of the Study

Methodological limitations of this study inherently limit the generalizability of the results. Limitations included the sample, which was comprised of a relatively small group of participants who were volunteers, and who were heterogeneous in nature. Participants and their qualifying partners represented rural communities in New York State. The participants varied in age, race, ethnicity, and cultural background. The quality of the discussions was not a controlled measure; therefore, variability was expected to occur in terms of the characteristics of the conversations being held, as perceived by the participants. Generalizability was further limited by the sample, as it was necessary to exclude potential participants or chosen partners with any serious mental health issues or medical issues that would cause limitations in physical activity. I excluded non-English-speaking participants and reclusive people, due to the necessary activities involved in the experience. Each of these methodological limitations could have impacted the data; future research could be designed in a more inclusive study with sufficient resources.

### Trustworthiness

The level of trustworthiness of the data from my research is partially contingent on the quality of the instruments used to collect the data (Golafshani, 2003). Although I believed that the instruments chosen for the research were appropriate for the purpose of

the study, it is possible that the use of these instruments caused a limitation in the trustworthiness of the data. This could have been caused by the wording of the items on the instruments or by the level of participants' judiciousness in completing the questionnaires. One possible explanation for the results could be that the brief mood introspection scale and the session rating scale were not sufficiently sensitive to detect the effects of the combination of walking and talking versus sitting and talking. The basic psychological needs in exercise scale may not have measured psychological aspects of self-determination as precisely as intended. Although each of the chosen instruments was appropriate for the purposes of the current study, it is possible that a comprehensive interview with participants following each activity could further elucidate the effects of the intervention. It is possible that a discussion related to the specific aspects of mood and the biopsychosocial effects of the activities could have yielded more precise results. It is possible that participants did not complete the instruments as carefully as possible, and may have failed to reflect on the slight distinctions between their psychological states. In the effort to save time, participants may have answered the questionnaires quickly without careful consideration of the differences between their mood states before and after the activity. For these reasons, a qualitative design could be considered in future research to allow participants to verbalize more specifically their feelings and describe their experience with more detail. In the current study, it was not feasible for me to meet with each participant. However, in a larger study with increased resources, it may be useful for researchers to gather narrative explanations of the participants' experiences, thereby gaining enriched insight regarding the effects of the interventions.

No significant correlation was found between brief mood introspection scale scores and basic psychological needs in exercise scale scores; no significant correlation was found between session rating scale scores and basic psychological needs in exercise scale scores. As aforementioned, it is possible that the scale used to measure psychological needs being met during exercise did not adequately capture the concepts of self-determination theory, such as competence and self-efficacy. A comprehensive discussion related to the concepts of autonomy and self-determination, as well as the level of satisfaction with the experience, may provide insight superior to the knowledge that can be gained via the simplified questionnaire.

**Validity**

The validity of the study depends on whether the research measured what it was intended to measure (Golafshani, 2003). Limitations caused by the research design may have jeopardized the validity of the results. For example, the relatively short-term length of the study could have encumbered the validity of the results. Each participant's involvement was to be completed within ten weeks, thus limiting the observations that may have been made in the process. A longer-term study might yield more reliable, valid results. Carduff, Murray, and Kendall (2015) wrote that contemporary qualitative longitudinal research is driven by the effort to understand what, how, and why change happens in the socio-cultural context. A major advantage of qualitative longitudinal research is the nuanced understanding of phenomena that develops over time (Carduff et al., 2015). For the purposes of my research, the long-term, qualitative approach was not feasible; however, further research could be designed to facilitate the possibility for participants to reflect carefully on the questions they are asked; this could result in

outcomes that more accurately reveal the subtle differences in participants' moods, satisfaction levels, and gratification of psychological needs.

**Reliability**

The reliability of research results depends on the level of repeatability and consistency of the results (Golafshani, 2003). The accuracy of the results is somewhat limited due to the variety of uncontrolled factors in the research design. For example, in my design, I was not able to carefully monitor or control the level of exertion. It may be useful in future research to carefully control the level of physical exertion in the effort to determine the correlations between aspects of physical exercise and psychological effects. Additionally, the instruments utilized were self-report questionnaires, which may have limited the amount of detailed, nuanced responses that could provide insight related to the biopsychosocial effects of the activities. The tools that were chosen for the study provided relative ease of completion and mitigated participants' time constraints. The instruments supported participants' potential desire for privacy, thus limiting the amount of information that might be collected via a qualitative study or by using different instruments. The use of self-administered questionnaires to measure participants' moods, levels of satisfaction, and fulfillment of psychological needs may have limited the quality of information gathered. This study relied on the participants' relatively quick and simplistic reports of the results using Likert-like scales.

## Recommendations

Future research may provide a greater understanding of the mechanisms associated with psychological well-being when combining participation in physical exercise with supportive conversation. Future research may also benefit from a more

highly controlled study design. Specific recommendations for future research will be presented in the following paragraphs.

**Time Frame**

Conducting research over a longer period of time may provide more useful results in the study of the combination of walking and talking, and its effects on mood and session satisfaction. Using a long-term study design rather than the relatively short-term design of this study would provide more rich data. It is possible that asking participants to practice the activities over a longer period of time may yield results that could better differentiate between the effects of the activities. It is feasible that if participants were given the opportunity to develop relationships with partners over a longer period of time, a deeper understanding of each other could foster more meaningful discussion. Participating in supportive conversation has been shown to have a positive influence on individuals' state of mind, enhancing self-confidence and inner strength (Bäck-Pettersson et al., 2014). Longer weekly sessions may be more adequate in terms of allowing the participants to enjoy the cathartic benefits of supportive conversation. Future research may involve twenty or more weekly sessions of one hour in duration. Von Glahn (2012) explained that a significant goal of any therapeutic experience is to bring feelings, thoughts, and attitudes into the open, thereby helping to process the individual conflicts and problems. Longer discussions, over a longer period of weeks, may help participants to meet these goals.

Additionally, each participant could be given the entire hour to focus on his or her personal experiences, thoughts, and feelings. Providing an opportunity for participants to be the focus of attention for a longer period of time per session (as opposed to sharing the

attention with a study partner) may result in a higher-quality cathartic experience. This may be more analogous to a traditional therapy session, which would, ideally, maximize the positive cathartic effects of the relational talk portion of the research. Von Glahn (2012) wrote that the facilitative condition for a cathartic release is that sufficient support and acceptance is provided; a nondirective manner of discussion is supportive of the healing process. Allowing sufficient time for participants to express themselves could maximize the intended benefits of the activities and could provide more meaningful outcomes.

**Exertion Levels**

Several studies have indicated positive correlations between physical exercise and emotional health (e.g., McGale et al., 2011; Oeland et al., 2010; Roman, 2010; Scheewe et al., 2013; Ströhle, 2009). Improvements in self-esteem and quality of life are documented as outcomes of physical exercise, as well as reduction in depressive symptoms. However, there is currently little information regarding the specific biopsychosocial mechanisms associated with the process of combining physical exercise with supportive discussion. It may be prudent for future researchers to more carefully measure the physiological effects of the exercise portion of this type of intervention. For example, it may be useful to create an environment in which participants are able to reach and maintain a steady, elevated heart rate. One possible mechanism for controlling this aspect of the research would be to utilize a treadmill, whereby the participants' heart rates would be monitored and maintained while holding a supportive discussion. Researchers would be prudent to collaborate with participants' medical physicians in order to set an ideal level of exertion for the research. This would ensure that the physical exercise

portion of the research meets consistent and safe standards, in order to gather accurate data. Also, maximizing the potential benefits of physical exercise may provide more meaningful results. Collecting data on levels of physical exertion during supportive conversation could lead to a better understanding of the correlative relationships between physical exercise and psychological well-being.

**Aspects of Self-Determination**

Future research may also benefit from a more highly controlled study design, with regard to aspects of self-determination. For example, providing an opportunity for participants to have more control over the location, schedule, and type of exercise may augment their experience of autonomy and self-determination. In this way, participants may feel a heightened sense of autonomy and self-efficacy. Since people are motivated by the sense of ownership of their behavior, the feeling of mastering a challenging task, and the meaningful connection with others in the related social environment (Ryan & Deci, 2008; Wilson et al., 2008), allowing participants to make additional choices could improve their feeling of self-determination, which could, in turn, affect their satisfaction with the experience.

The study could be designed to allow participants to choose where and when to walk and talk. This may be accomplished by studying the effects of the combination of walking and talking on one participant per partnership. Each participant would be invited to choose the time and location of his or her weekly session and would be met by the partner. Data would be collected only on the participant who is making choices related to the activities. This design may allow participants to experience a higher level of competence and may result in more meaningful data in terms of studying aspects of self-

determination. Ideally, a qualitative design could be used to gather meaningful data on the participants' experience with regard to aspects of self-determination.

**Supportive Therapeutic Interventions**

A potential limitation of the current research included the fact that the aspect of supportive conversation was not carefully monitored. Future studies may gain additional knowledge and insight by utilizing mental health professionals who deliver psychotherapy to participants during physical exercise. The current research was limited to using laypersons that may not have possessed the skills to provide the intended experience for each other. Ideally, participants would be provided with an experience of therapeutic discussion, by a trained mental health professional.

Supportive conversation, frequently utilized as standard treatment in psychiatric care, has found to be beneficial when the focus is on problem-solving and alleviating difficulties of daily demands of life (Bäck-Pettersson et al., 2014). This design may enhance the quality of the cathartic process, thereby increasing the potential benefits of the activities. Catharsis is one of the elements of psychotherapy that has been shown to facilitate improved emotional health (Landoll et al., 2011). Mental health workers are trained in supportive discussion, characterized by the acknowledgement of feelings, a considerate attitude, and respect for the other. The benefits of talking through one's problems and having someone listen attentively to these issues have been enumerated and are the basis of psychotherapy. Linden and Westram (2011) wrote that supportive verbal interactions are an important and indispensable part of any therapeutic process. Utilizing trained mental health practitioners may provide a more therapeutic experience, resulting

in more meaningful data related to the combination of physical exercise and supportive discussion.

### Mechanisms of Data Collection

The instruments I chose for the current research were self-report questionnaires utilized for collection of data on mood, session satisfaction, and fulfillment of psychological needs met by exercise. These scales were chosen for their relatively simple design; however, they may have resulted in somewhat subjective scaling on the measures. The tools were chosen for the ease of completion and in consideration of participants' time constraints. The use of self-administered questionnaires may have limited the quality of information gathered.

A more comprehensive depiction of these aspects may be obtained via qualitative methods such as more extensive, in-depth interviews, as opposed to using Likert-like scales. Future research may utilize a qualitative design to study and elucidate the effects of the combination of physical exercise and supportive discussion. Although this may require more time and a more intricate data analysis, it may result in more meaningful outcomes. A qualitative design was not feasible for the current study, as it would not have been possible for me to meet with each participant weekly. However, future research with sufficient resources may be designed to study the combination of walking and talking, and its effects on mood and session satisfaction.

## Implications Related to Social Change

As noted by researchers, quality of life may be improved substantially if patients practice an active lifestyle. A large number of studies have shown significant beneficial effects of exercise on mood (Bock et al., 2014; Hays & Sime, 2014; Gallegos-Carrillo et

al., 2013; Mata et al., 2012). Additionally, supportive conversation, frequently utilized as standard treatment in psychiatric care, has found to be beneficial when the focus is on problem-solving and alleviating difficulties of daily demands of life (Bäck-Pettersson et al., 2014).

The current study did not significantly support my prediction that the combination of walking and talking would enhance mood and increase session satisfaction more than holding a supportive discussion while sitting. It did not result in a significant correlation between higher levels of psychological need fulfillment and session satisfaction. It resulted in no significant correlation between higher levels of psychological need fulfillment and mood elevation. There is a need for greater fine-tuned research relating to the combination of physical activity and supportive interaction in order to better define and describe the potential differences between the two sets of activities.

## Conclusions

The current research is important due to the high prevalence of mental and physical disorders experienced by American adults, causing much concern among health professionals; research supports that many of these disorders may be avoided or mitigated via supportive conversation, or through the practice of physical exercise. This study proposed that the general human condition could be improved through physical activity combined with the practice of supportive conversation. Although further research is required to more fully understand the effects of combining physical exercise with supportive discussion, this intervention holds promise for contributing to beneficial, low-cost, lifestyle practices for physical health and psychological well-being.

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# Appendix A: Consent Form

*The Combination of Walking and Talking for the Elevation of Mood and Satisfaction Levels*

You are invited to be involved in a research study of the effects of the combination of physical exercise and supportive discussion on mood and session satisfaction. You were selected as a possible participant because you met the criteria for this study. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

The study is being conducted by Lori Kellner-Schoelles, Doctoral Student at Walden University.

**Background Information**
The purpose of this study is to understand the effects of combining physical exercise with supportive conversation on the psychological well-being and session satisfaction in adults. Does the practice of simultaneously walking and talking have a different effect on mood than sitting and talking? Do increased levels of satisfaction of psychological needs in exercise correspond with better outcomes as shown by a positive relationship between rating scale results? Does walking and talking result in different levels of session satisfaction than sitting and talking?

**Procedures**
If you agree to be in this study, I would ask you to do the following:

Please fill out self-report questionnaires before and after each session of either sitting and talking or walking and talking for a half-hour. The surveys have questions about your mood, your satisfaction with the experience, and the level to which your psychological needs were met during exercise. Lori Kellner-Schoelles will distribute and collect the surveys via email or through the US Postal Service. You will be asked to complete ten sessions, one per week, for ten weeks, filling out the instruments, and sending them back to the researcher each week.

**Risks and Benefits of Being in the Study**
The study has minimal risk. If any physical or emotional pain occurs, you are expected to discontinue the activity and take the recommended steps to receive assistance for any detrimental emotional or physical consequences. Potential participants who experience any difficulty completing the activity will be excused from the study and asked to complete a final questionnaire.

The benefits to participation include the knowledge that you are contributing to the research for improved physical and emotional health. Additionally, you may enjoy improved physical and/or emotional health. A $20 incentive will be offered to each participant.

**Confidentiality**
The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be kept in a locked file; only the researcher will have access to the records. Records will be destroyed after five years. You are expected to maintain confidentiality of the information shared by your partner.

**Voluntary Nature of the Study**
Your decision whether or not to participate will not affect your current or future relations with the researcher or any organizations. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

**Contacts and Questions**
The researcher conducting this study is Lori Kellner-Schoelles. Please feel free to ask any questions you have now, and if you have questions later, please contact me at (716) 863-4632 or Lori.kellner@waldenu.edu. You will be given a copy of this form to keep for your records. Thank you very much for your time and consideration.

**Statement of Consent**
I have read the above information. If I have asked questions, I have received answers.
I consent to participate in the study.

_____

Signature Date

# Appendix B: Participant Questionnaire

Please answer the following questions for the collection of demographic information and for purposes of determining appropriateness of participation.

Name_____

Gender_____ (For research purposes only. All are welcome to participate.)

Ethnicity_____(For research purposes only. All are welcome to participate.)

Level of Education_____(For research purposes only. All are welcome to participate.)

Are you 18 or older?

Yes_____
No_____
*This study is approved for adults, age 18 and above.

Do you have any physical limitations that would prevent you from safely carrying out the practice of walking at a moderate pace, without stopping, for one half hour every week, for five weeks?

Yes_____
No_____
*Physical limitations to this degree of safely walking preclude participation in this study.

Do you have any mental health conditions that you believe would negatively affect your ability to participate in this study?

Yes_____
No_____
*Mental health conditions that would negatively affect participation preclude participation in this study. Individuals who are suffering from mental health issues are encouraged to seek or continue treatment.

Can you identify a safe place where you could take a half-hour walk (for example: a park, a mall, or a track)?

Yes_____
No_____
*Without a safe walking environment for the study, participation in the study is precluded.

Can you identify a potential study partner who also meets these requirements?
Yes_____
No_____

*Without a study partner with whom you can walk and talk, participation in the study is precluded.

# Appendix C: BMIS

## Brief Mood Introspection Scale (BMIS) by John D. Mayer

INSTRUCTIONS: Circle the response on the scale below that indicates how well each adjective or phrase describes your present mood.

(definitely do not feel) (do not feel) (slightly feel) (definitely feel)

XX X V VV

| | | | |
|---|---|---|---|
| Lively | XX X V VV | Drowsy | XX X V VV |
| Happy | XX X V VV | Grouchy | XX X V VV |
| Sad | XX X V VV | Peppy | XX X V VV |
| Tired | XX X V VV | Nervous | XX X V VV |
| Caring | XX X V VV | Calm | XX X V VV |
| Content | XX X V VV | Loving | XX X V VV |
| Gloomy | XX X V VV | Fed Up | XX X V VV |
| Jittery | XX X V VV | Active | XX X V VV |

Overall, my mood is:

Very Pleasant Very Unpleasant

-10 –9 –8 –7 –6 –5 –4 –3 –2 –1 0 1 2 3 4 5 6 7 8 9 10

*Please Note: The "Overall, my mood is" section is usually omitted, although some people use it and fold it into the overall score.*

**Original Citation**: Mayer, J. D., & Gaschke, Y. N. (1988). The experience and meta-experience of mood. Journal of Personality and Social Psychology, 55, 102-111. [Scoring instructions are described there]
**Some Other Articles that Have Used the Scale:***

• Examination of the paths between personality, current mood, its evaluation, and emotion regulation. Kokkonen, Marja; Pulkkinen, Lea; European Journal of Personality, Vol 15(2), Mar-Apr 2001. pp. 83-104.
• Resolution of lexical ambiguity by emotional state. Halberstadt, Jamin B.; Niedenthal, Paula M.; Kushner, Julia; Psychological Science, Vol 6(5), Sep 1995. pp. 278-282.
• Intrusive thoughts as determinants of distress in parents of children with cancer. Hall, Martica; Baum, Andrew; Journal of Applied Social Psychology, Vol 25(14), Jul 1995. Special issue: Rumination and intrusive thoughts. pp. 1215-1230.
• Mood inductions for four specific moods: A procedure employing guided imagery vignettes with music. Mayer, John D.; Allen, Joshua P.; Beauregard, Keith; Journal of Mental Imagery, Vol 19(1-2), Spr- Sum 1995. pp. 151-159.
• Mood-congruent judgment over time. Mayer, John D.; Hanson, Ellen; Personality & Social Psychology Bulletin, Vol 21(3), Mar 1995. pp. 237-244.

Appendix D: BMIS Permission

**Brief Mood Introspection Scale**

Version Attached: Full Test

PsycTESTS Citation: Mayer, J. D., & Gaschke, Y. N. (1988). Brief Mood Introspection Scale [Database record]. Retrieved from PsycTESTS. doi: http://dx.doi.org/10.1037/t06259-000

Instrument Type: Rating Scale

Test Format: The response format for the BMIS is a 4-point scale anchored by (XX) definitely do not feel, (X) do not feel, (V) slightly feel, and (VV) definitely feel.

Source: Mayer, John D., & Gaschke, Yvonne N. (1988). The experience and meta-experience of mood. Journal of Personality and Social Psychology, Vol 55(1), 102-111. doi: 10.1037/0022-3514.55.1.102

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PsycTESTSTM is a database of the American Psychological Association

Appendix E: SRS

**Session Rating Scale (SRS V.3.0)**

Name _____Age (Yrs):____ ID# _____
Sex: M / F Session # ____ Date: _____

Please rate today's session by placing a hash mark on the line nearest to the description that best fits your experience.

Relationship

I did not feel heard, understood, and respected. I———————————I I felt heard, understood, and respected.

Goals and Topics

We did not work on or talk about what I wanted to work on and talk about. I———————————I We worked on and, talked about what I wanted to work on and talk about.

Approach or Method

My study partner's approach is not a good fit for me. I———————————I My study partner's approach is a good fit for me.

Overall

There was something missing in the walking/talking session today. I———————————I Overall, today's walking/talking session was right for me.

Institute for the Study of Therapeutic Change. (Underlined terms were changed for this study, with permission from the author.) www.talkingcure.com *2000, Lynn D. Johnson, Scott D. Miller and Barry L. Duncan*

# Appendix F: SRS Permission

-------- Original message --------
From: "Scott D. Miller, Ph.D"
Date: 06/27/2016 6:29 PM (GMT-05:00)
To: Lori Kellner <luckylorikellner@hotmail.com>
Subject: Re: Dissertation research

As long as you register you have my permission.

Original Message

From:luckylorikellner@hotmail.com

Sent: June 27, 2016 1:14 PM

To:scottdmiller@talkingcure.com

Subject: Dissertation research

Hello Dr. Miller!

I would like to ask you for permission to utilize your Session Rating Scale (Version 3) for my dissertation research. My participants will be using it as a self-report to reflect their level of satisfaction with their experience of walking and asking with their study partner, and also with their experience of sitting and talking with each other. It will be used in a way which is different from the typical usage, administered by clinicians. I wanted to make sure that this usage was appropriate, in your opinion… Would you kindly permit me to use the instrument in this 'non-traditional' way, for the purpose of my study only? I will register for a license to use the instrument, and then I will guide the participants on the usage of the scale, and I will inform the participants to replace the term 'therapist' on the instrument with 'study partner' when completing the form. Thank you for your consideration.

Sincerely,

Lori Kellner-Schoelles, Doctoral Student, Walden University

# Appendix G: SRS License

IMPORTANT!
By downloading this file you have indicated your complete agreement and willingness to abide by the terms of the **ORS, SRS, CORS, CSRS, YCORS/SRS, GSRS, GCSRS, LASS and Oral Versions Binding License Agreement**

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**6. Use, distribution, and Changes**: The measures may only be used and distributed by the licensee in connection with licensee's bona fide health care practice and may not be used or distributed for any other purpose.

**7. Responsibility**: Before using or relying on the measures, it is the responsibility of the licensee to read and understand procedures for administering, scoring, and implementing the ORS and SRS as outlined in the FIT Treatment and Training Manuals. It is also the responsibility of the licensee to ascertain their suitability for any and all uses made by the licensee. The measures are not diagnostic tools sand should not be used as such. The measures are not substitutes for an independent professional evaluation. Any and all reliance on the measures by the licensee is at the licensee's sole risk and is the licensee's sole responsibility. Licensee indemnifies PCOMS and it's officers, directors, employees, representatives, and authors of the measures against, and hold them harmless from, any and all claims and law suits arising from or relating to any use of or reliance on the measures and related products provided by PCOMS. This obligation to indemnify and hold harmless includes a promise to pay any and all judgments, damages, attorney's fees, costs and expenses arising from any such claim or lawsuit.

**8. Disclaimer**: Licensee accepts the measures and associated products "as is" without any warranty of any kind. PCOMS disclaims any and all implied warranties, including implied warranties of merchantability, fitness for a particular purpose, and non-infringement. PCOMS does not warrant that the measures are without error or defect. PCOMS shall not be liable for any consequential, indirect, special, incidental or punitive damages. The aggregate liability of PCOMS for any and all causes of action (including those based on contract, warranty, tort, negligence, strict liability, fraud, malpractice, or otherwise) shall not exceed the fee paid by the licensee to PCOMS. This license agreement, and sections 7 and 8 in particular, define a mutually agreed upon allocation of risk. The fee reflects such allocation of risk.

**9. Construction**: The language used in this agreement is the language chosen by the parties to express their mutual intent, and no rule of strict construction shall be applied against any party.

**10. Entire agreement**: This agreement is the entire agreement of the parties relating to the measures.

**11. Governing Law**: This agreement is made and entered into in the State of Florida and shall be governed by the laws of the State of Florida. In the event of any litigation or arbitration between the parties, such litigation or arbitration shall be conducted in Florida and the parties hereby agree and submit to such jurisdiction and venue.

**12. Modification**: This agreement may not be modified or amended.

**13. Transferability**: This agreement may not be transferred, bartered, loaned, assigned, leased, or sold by the licensee.

**14. Violations**: Violations of any provision or stipulation of this agreement will result in immediate revocation of this license. Punitive damages may be assessed.

Appendix H: BPNES

S. P. Vlachopoulos, N. Ntoumanis, and A. L. Smith

## Appendix

### The Basic Psychological Needs in Exercise Scale (BPNES)

Instructions. The following sentences refer to your overall experiences in exercise as opposed to any particular situation. Using the 1-5 scale below, please indicate the extent to which you agree with these statements by circling one number for each statement.

| | I don't agree at all | I agree a little bit | I somewhat agree | I agree a lot | I completely agree |
|---|---|---|---|---|---|
| 1. I feel I have made a lot of progress in relation to the goal I want to achieve. | 1 | 2 | 3 | 4 | 5 |
| 2. The way I exercise is in agreement with my choices and interests. | 1 | 2 | 3 | 4 | 5 |
| 3. I feel I perform successfully the activities of my exercise program. | 1 | 2 | 3 | 4 | 5 |
| 4. My relationships with the people I exercise with are very friendly. | 1 | 2 | 3 | 4 | 5 |
| 5. I feel that the way I exercise is the way I want to. | 1 | 2 | 3 | 4 | 5 |
| 6. I feel exercise is an activity which I do very well. | 1 | 2 | 3 | 4 | 5 |
| 7. I feel I have excellent communication with the people I exercise with. | 1 | 2 | 3 | 4 | 5 |
| 8. I feel that the way I exercise is a true expression of who I am. | 1 | 2 | 3 | 4 | 5 |
| 9. I am able to meet the requirements of my exercise program. | 1 | 2 | 3 | 4 | 5 |
| 10. My relationships with the people I exercise with are close. | 1 | 2 | 3 | 4 | 5 |
| 11. I feel that I have the opportunity to make choices with regard to the way I exercise | 1 | 2 | 3 | 4 | 5 |

*Note.* The initial Relatedness 1 item, "I feel comfortable with the people I exercise with," was removed from the translated BPNES version.

*Key.* Autonomy: items 2, 5, 8, 11; Competence: items 1, 3, 6, 9; Relatedness: items 4, 7, 10.

# Appendix I: BPNES Permission

Dear Lori

Thank you for your request to use the BPNES. Yes you have permission to use the scale.

Best of luck with your research

Sincerely
Symeon Vlachopoulos

Παραθέτοντας από "Kellner-Schoelles, Lori J (OMH)"

> Hello!
>
> I would like to ask for permission to use the Basic Psychological
> Needs I Exercise scale for my dissertation research. I am looking at
> the combination of walking and talking for the elevation of mood and
> session satisfaction. I would like to use your scale to compare with
> mood ratings and session ratings, to determine if there is a
> correlation between higher scores on the BPNES and mood scale scores,
> and session rating scores.
>
> I would greatly appreciate your permission to use this scale for my
> research. Please let me know. Thank you!
>
> Lori Kellner-Schoelles, M.A.
> Psychology Intern
>
> Central New York Psychiatric Center- Office of Mental Health

--
Symeon Vlachopoulos, PhD
Professor | Sport and Exercise Psychology Department of Physical Education and Sport Science at Serres School of Physical Education and Sport Science Aristotle University of Thessaloniki | Symeon_Vlachopoulos
http://orcid.org/0000-0002-9925-6115

Appendix J: Guidelines

**Guidelines for Participation**

In order to promote a positive experience for the participants, the following guidelines should be followed:

- Interact in generally positive and supportive ways.
- Practice active listening and refrain from judgment during discussions.
- Begin the conversation with a question about your partner's past week and the efforts being made toward personal goals, or the barriers to their goals.
- Participants may choose to discuss their personal relationships or life stressors.
- The sessions will be carried out as supportive discussions.
- Discontinue the session if any emotional or physical discomfort arises.
- Report any inappropriate or uncomfortable interactions to the researcher.
- Walk and talk together for thirty minutes at a brisk but comfortable pace; participants should be able to carry on a conversation, but also slightly raise their heart rate.
- Evenly divide the sessions to ensure that each participant is given equal time.

  Suggestions for possible questions/topics of conversation:

  ~Did you have any difficult experiences this past week?

  ~How are things with your family?

  ~Are you facing challenges at work?

  ~How are you doing in terms of reaching your goals?

  ~What are the barriers to your goals?

  ~How are you handling these challenges?

# Appendix K: Discontinuation Questionnaire

Participant Questionnaire for Discontinuation of Involvement

Participant number _____

Thank you so very much for what you have contributed to this research. Although you are choosing to discontinue your involvement at this point, I am interested in hearing about how you experienced the study. It would be very helpful to me if you would answer the following questions:

Would you be willing to share the reason you chose to discontinue?

_____

_____

_____

Would you like to provide any additional information as feedback to the researcher?

_____

_____

_____

If you are looking for additional resources for assistance with depression, anxiety, or other psychological conditions, the following website may prove helpful: http://psychcentral.com/resources

Please feel free to contact me with any other input that you might want to discuss. I can be reached at: lori.kellner@waldenu.edu or (716) 863-4632.

Thank you very much for your participation.

# Appendix L: Figures

Demographic Frequencies

| Demographic | | N |
|---|---|---|
| Gender | Female | 30 |
| | Male | 22 |
| Ethnicity | Caucasian | 26 |
| | African American | 3 |
| | Mixed | 1 |
| Education | High School | 4 |
| | Some College | 7 |
| | Associates | 3 |
| | Bachelors | 7 |
| | Masters | 5 |

Hypothesis Tests: t-Tests: Change in Mood and Session Rating, Walking vs. Sitting

| | Walking (n=26) | | Sitting (n=26) | | | |
|---|---|---|---|---|---|---|
| Study Variable | Mean | Std Dev. | Mean | Std Dev. | t | p |
| Change in Mood (BMIS) | 2.16 | 4.860 | 1.80 | 3.951 | 0.931 | 0.352 |
| SRS_TOTAL | 338.84 | 53.148 | 337.38 | 55.391 | 0.306 | 0.760 |

ANOVA's: Change in Mood and Session Rating, Walking vs. Sitting

| | Walking (n=26) | | Sitting (n=26) | | | |
|---|---|---|---|---|---|---|
| Study Variable | Mean | Std Dev. | Mean | Std Dev. | F | p |
| Change in Mood (BMIS) | 2.16 | 4.860 | 1.80 | 3.951 | 0.866 | 0.352 |
| SRS_REL | 84.43 | 14.071 | 83.55 | 15.382 | 0.464 | 0.496 |
| SRS_GOAL | 84.46 | 13.555 | 83.49 | 15.051 | 0.595 | 0.441 |
| SRS_APP | 84.05 | 13.540 | 84.40 | 14.060 | 0.085 | 0.770 |
| SRS_OVER | 86.02 | 13.046 | 85.95 | 13.556 | 0.004 | 0.953 |
| SRS_TOTAL | 338.84 | 53.148 | 337.38 | 55.391 | 0.094 | 0.760 |

Regression: Basic Psychological Needs in Exercise as a Predictor of Change in Mood and Session Ratings

| | R | $R^2$ | p | B | Constant |
|---|---|---|---|---|---|
| Change in Mood (BMIS) | 0.127 | 0.016 | 0.041 | 0.096 | -2.450 |
| SRS_TOTAL | 0.064 | 0.004 | 0.302 | 0.531 | 313.289 |

Pearson Correlation: Basic Psychological Needs in Exercise vs. Change in Mood and Session Ratings

| | R | p |
|---|---|---|
| Change in Mood (BMIS) | 0.127 | 0.041 |
| SRS_REL | 0.051 | 0.413 |
| SRS_GOAL | -0.022 | 0.728 |
| SRS_APP | 0.056 | 0.364 |
| SRS_OVER | 0.038 | 0.542 |
| SRS_TOTAL | 0.064 | 0.302 |